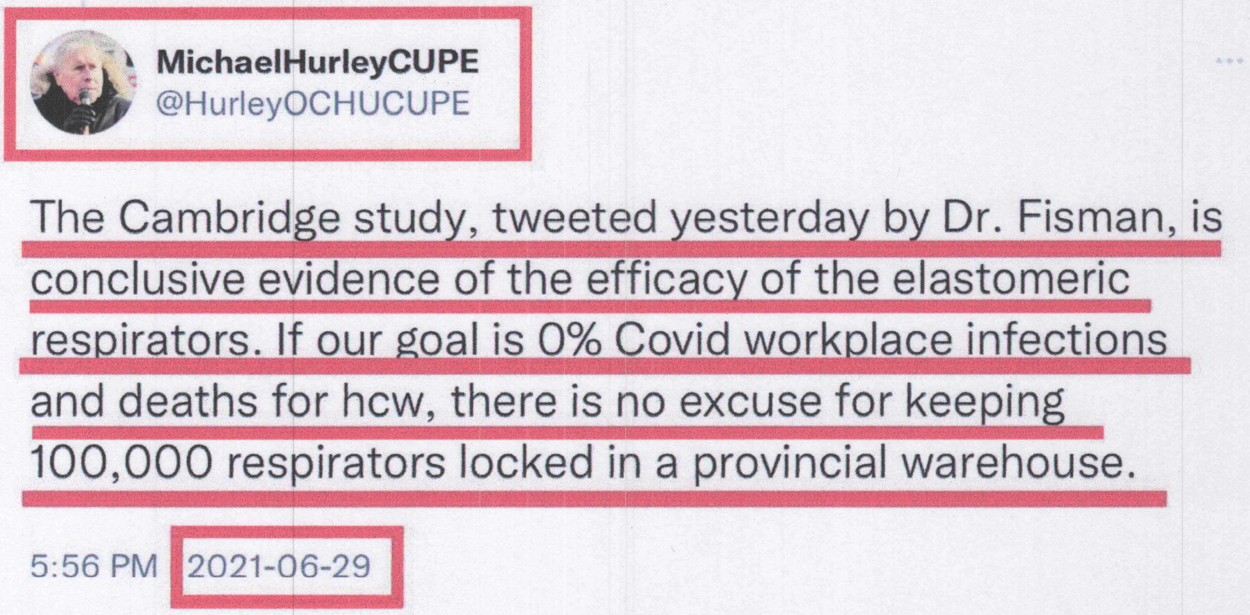
Direct evidence of widespread criminal acts by top Ontario government officials and politicians leading to the preventable deaths and mass injuries among workers:

How the government got away with injuring 10,000s of workers by obstructing justice plus purposely withholding crucial PPE stockpiles and valuable information regarding overlooked Ontario Health PPE recommendations to avoid having to keep workers properly protected with readily available PPE



MichaelHurleyCUPE
@HurleyOCHUCUPE

The Cambridge study, tweeted yesterday by Dr. Fisman, is conclusive evidence of the efficacy of the elastomeric respirators. If our goal is 0% Covid workplace infections and deaths for hcw, there is no excuse for keeping 100,000 respirators locked in a provincial warehouse.

5:56 PM 2021-06-29

Created by Nicolas Smit

Report for the Ontario Provincial Police, Ministry of Labour, journalists, lawyers and politicians

February 16, 2023

February 16, 2023

Staff Sergeant Lawson
Investigation and Support Bureau of the
Ontario Provincial Police
3767 Hwy. 69 South, Suite 1
McFarlane Lake Complex
Sudbury, Ontario
P3G 1E3

Jervis Bonnick
Provincial Claims Centre
Ministry of Labour, Immigration, Training
and Skills Development
70 Foster Drive, Suite 410
Roberta Bondar Place
Sault Ste. Marie, Ontario
P6A 6V4.

Dear Staff Sergeant Lawson and Mr Bonnick,

As a top international expert on PPE for infection control, I (Nicolas Smit) have advised and consulted with the CDC, the White House Covid team, members of Congress, Canadian federal politicians, Ontario provincial politicians, major news outlets including the New York Times, Reuters, the Washington Post, CBC, Radio Canada, and received a special award from Doug Ford for my contributions to society plus the economy, I am writing to express my grave concern and urge you to launch a thorough investigation into the gross misconduct of the Ontario government regarding their handling of Personal Protective Equipment (PPE) during the ongoing COVID-19 pandemic.

The government's purposeful actions have resulted in the significant loss of life and suffering as well as long term injuries that could have been prevented had workers been properly protected with PPE the government had in their position, had workers been properly informed of the risks plus was available to help eliminate those risks or had workers not been actively prevented from using government recommended PPE.

While there are a lot of different criminal and civil charges the Ministry of Labour and the OPP can lay, your investigations will likely determine that with the gravity of the situation including the total disregard for worker safety and the widespread trauma it caused, at minimum the following criminal charges need to be laid:

Negligence – The government has a duty to protect the health and safety of healthcare workers and government employees. By purposely keeping a government stockpile of elastomeric respirators meant to protect 200,000 workers with the highest levels of protection available locked up and pretending PPE shortages were out their control, the government failed to fulfill that duty. This failure constitutes negligence, as it resulted in the deaths of healthcare workers, teachers and other government employees who could have been protected by the use of these respirators.

Criminal liability – The government's purposeful actions in hiding the stockpile of elastomeric respirators, pretending that PPE shortages were out of their control, and pretending that airborne transmission wasn't occurring while healthcare workers and government employees were dying, could be considered a criminal act. If you confirm the government's actions were found to have been intentional or malicious, those involved could be charged with manslaughter or even murder for the deaths that occurred. They can also be charged with criminal negligence causing bodily harm for the workers or the members of the public that became injured as a result of the government's purposeful actions.

Breach of public trust – The government has a duty to act in the public interest, and by keeping the stockpile of elastomeric respirators hidden from public view while claiming widespread PPE shortages were occurring as well as not informing the public to the government recommendations to use elastomeric respirators as an N95 alternative, and pretending no evidence of airborne transmission occurred, they have broken the public trust. This could be considered as a breach of public duty.

Obstruction of justice – The government's decision to keep the purchase of the elastomeric respirators from the Ontario Auditor General when she was investigating the province's purchases of PPE during the pandemic is a clear obstruction of justice. The Auditor has already found wrongdoing on the government's part in relation to the large contract given to 3M in August 2020 to produce N95s for the government. Had valuable information not been kept from the Auditor General even after the government was informed of this, the Auditor would have uncovered that the contract given to 3M wouldn't have been able to occur had the 3M stockpile of elastomeric respirators purchased months prior been distributed as Doug Ford's office had originally intended.

Fraud – The government fraudulently represented that the PPE shortages were out of their control when in fact they had the PPE in their possession and deliberately prevented it from being distributed. They then went on to purchase PPE that wouldn't have been needed had the elastomeric respirator stockpile been distributed as originally intended and pretended that the large contract with 3M would finally help solve the PPE shortages.

Manslaughter or Murder – The government's failure to provide adequate PPE and failure to inform employees of the hazards in the workplace can be considered manslaughter or murder. Since deaths continued to occur over a long period of time and nothing was done to prevent further deaths, it was foreseeable that the continued actions of those involved in withholding adequate PPE from workers or failing to alert the police and the public to the negligence would continue to result in further preventable deaths.

Various violations of the Occupational Health and Safety Act – the government had the duty to take every reasonable precaution to protect the health and safety of their workers. The failure to inform workers of the hazards and withholding the PPE that could eliminate their risks associated with those hazards is a gross violation of the government's duty.

Background

In June 2020, months after Ontario Health recommended elastomeric respirators (also known as P100 respirators) as N95 alternatives, Doug Ford's office launched an internal investigation to determine why health care workers were being actively prevented from using elastomeric respirators even as hospitals had little to no N95s available to them. This investigation was as a result of an email Nicolas Smit sent to Doug Ford's office on June 16, 2020. David Morgado, Doug Ford's Executive Assistant, sent Nicolas Smit an email on June 29, 2020 to let him know the results of that investigation. That email and further evidence is provided along with this letter.

As a result of that internal investigation, the Ontario government procured a large stockpile of 100,000 elastomeric respirators with P100 filters from 3M, with the intention of immediately distributing the entire stockpile to hospitals and long term care homes in order to quickly eliminate the problems caused by the N95 shortages. On June 26, 2020 NDP Health Critic France Gelinas confirmed that plan in a private message to Mr Smit. France Gelinas also posted about this purchase on her Facebook page on July 20, 2020.

However, instead of distributing these respirators to government employees, hospitals or long term care homes as originally planned, the government misled the public to believe that workers could not be properly protected from COVID-19 due to PPE shortages that were out of their control.

Furthermore, the government failed to properly inform hospitals and long-term care homes to the presence of the stockpile and to the Ontario Health PPE recommendations to use elastomeric respirators as N95 alternatives. Instead of having proper PPE, workers were forced to use PPE that wasn't meant to protect them from infection or use dangerous conservation measures including using expired PPE and reusing disposable PPE for weeks at a time. These failures not only continue to harm those in the health care and long term care settings, these failures are also affecting workers in all high risk settings including education, first responders, those working in manufacturing facilities, warehouses, food plants and any other congregate setting.

The government not only hid the presence of an important lifesaving PPE stockpile from workers, they also hid the purchase from the Auditor General and did not alert her to the costs to purchase the PPE or to keep the stockpile locked up since June 2020. The government's actions in hiding the purchase of elastomeric respirators from the Ontario Auditor General during her investigation into PPE purchases during the pandemic raises serious concerns about transparency plus accountability and should be investigated for obstruction of justice.

The government's failure to provide readily available PPE to employees, their decision to mislead the public about PPE shortages, as well as hide the existence of the elastomeric respirator stockpile from the Ontario Auditor General when she was investigating all the provinces purchases of PPE during the pandemic may constitute significant criminal misconduct.

Had the Auditor been informed of the purchase and the importance of elastomeric respirators in protecting workers, she could have investigated why the government signed a deal with 3M to produce N95s starting in April 2021. That deal wouldn't have been needed had the government not locked up the 100,000 elastomeric respirators and allowed shortages to continue in order to ensure a $100+ million deal with 3M went through without any red flags being raised.

Since the 3M deal for N95s was worth over $100,000,000 and was made under false pretenses, there is the potential for fraud charges, especially since the Auditor has already discovered the government bought a lot more N95s than what was actually needed and that many millions of N95s will likely be wasted as a result of this purchase. The government also turned down multiple offers from several domestic mask manufacturers in 2020 that could've helped get N95s or elastomeric respirators to ALL WORKERS IN ONTARIO instead of allowing the risk to workers to continue until 3M eventually produced N95s in April 2021.

8 months after Doug Ford's office decided to purposely withhold elastomeric respirators from hospitals and long term care homes that were experiencing widespread N95 shortages along with deadly outbreaks, Ministry of Labour inspectors, like those that inspected Waypoint Hospital near Barrie in January 2021, were still informing hospitals through word of mouth that they could help prevent future outbreaks and stop experiencing continued N95 shortages by upgrading their staff to elastomeric respirators.

It is unacceptable that hospitals and long term care homes had to learn from MOL inspectors only after multiple deaths had already occurred that using elastomeric respirators would have helped prevent their deadly outbreaks and how superior elastomeric respirators were to N95s while being made to be reused for years. Hospitals would have stopped experiencing PPE shortages since July 2020 had Doug Ford's office not purposely kept the PPE meant to eliminate those shortages locked up. Inspectors told Waypoint staff that using elastomeric respirators would be going above and beyond government recommendations so their importance to keeping workers safe was well known to some government workers that had the power to have the problems investigated and corrected.

Despite being recommended as an N95 alternatives, the government spread misinformation that elastomeric respirators were too dangerous to use both on government websites and in news interviews to the press. In addition to all the previous negligence listed, the government lied to the public when it said it didn't believe there was evidence the Covid virus was airborne. The Ontario Science Table, which was advising the government on how to deal with the pandemic knew at least by December 2021 that Covid was airborne, that it floated in the air instead of immediately falling, that it lingered in the air for a period of time and that tight fitting masks would be needed to keep people protected as best as possible from transmission and included that information in a PowerPoint presentation that can still be found on the government website.

The government knew or ought to have known that recommending surgical masks instead of N95s or elastomeric respirators would lead to preventable infections, deaths and injuries. In an April 2020 news interview, NDP Health Critic France Gelinas confirmed that the government knew surgical masks wouldn't be able to protect workers from infection while elastomeric elastomeric respirators could. Ms Gelinas also confirmed in the same news article that the government was concerned about reducing the spread of infection from workers to patients, not keeping workers safe by preventing them from getting infected in the first place.

Had elastomeric respirators been used as recommended by Ontario Health, health care workers would have been kept safe and not brought the infection home to their families. In order to best protect workers from droplet transmission, elastomeric respirators as well as N95s offer much better protection than surgical masks so if the goal is to reduce the risk as much as possible, the government should have recommended surgical masks only as a last resort if the better two options weren't available, not instead of, especially with the awareness that Covid could be airborne.

When the Canadian Federation of Nurses Union released an investigative report by Mario Possamai titled "A Time of Fear" in September 2020, there were numerous mentions in the report on the failure by the government to have used or promoted elastomeric respirators. The report also included how elastomeric respirators offered more protection than N95s, were more comfortable than N95s and were much more cost effective since they could be reused for years while N95s were made to be disposed of after a few hours of use yet the government continued to keep the stockpile of elastomeric respirators warehoused and allowed the N95 shortages to continue to affect workers.

Furthermore, when Mario Possamai was interviewed by the Ontario Long Term Care Commission on December 16, 2020 as part of the government's inquiry into the spread of COVID-19 in long term care environments, the transcript of his testimony shows Mario let the inquiry know that the failure to use or promote elastomeric respirators had a deadly impact on the spread of transmission in long term care yet once again the government failed to correct their negligence.

The information about the failure to use elastomeric respirators during pandemics was not new information to the Ontario government. Mario Possamai was the lead SARS investigator and his decades old report to the Ontario government released in the mid 2000s made reference to the failure to use or promote elastomeric respirators during the SARS pandemic. Infection control manuals given to municipalities like Peel in 2012 mention how elastomeric respirators would keep front line workers the best protected for droplet transmission as well as airborne transmission.

In addition, Public health units like the Porcupine Health Unit also received updated infection control guidelines in 2018 that also explain the need to use elastomeric respirators to protect workers from droplet as well as airborne transmission. With so much evidence to the importance of elastomeric respirators and the Chief Medical Officer of Health telling Doug

Ford's office in June 2020 that health care workers should never be prevented from using them and that they were an N95 alternative recommended by Ontario Health, the government knew or should have known that misleading the public to believe elastomeric respirators were dangerous and shouldn't be used would have severe consequences including hospitals actively preventing their staff and patients from using them, even why they've bought it themselves.

The Ontario government wasn't the only province to recommend elastomeric respirators as N95 alternatives. Had proper due diligence been done, the government would have uncovered the recommendations by other provinces including Manitoba and British Columbia among others to use elastomeric respirators and how to improve source control if additional source control was needed. The Ontario government also knew elastomeric respirators were recommended by the CDC, Health Canada, the FDA, OSHA and many more organizations the government, employers and the public reach out to for advice so why was there such a disconnect between what the public was being told and what the government knew to be wrong?

The government acted negligently when reprimanding government workers outside of health care, like those in educational settings and postal workers, for using N95s or elastomeric respirators. While the government used the excuse that the risk to workers was lower outside of health care settings so workers shouldn't use anything better than a surgical mask, the government should have known that workers would be better protected in N95s and elastomeric respirators plus that continuing to not use the highest levels of protection for droplet or airborne transmission would continue to wreak havoc on worker safety plus public health.

This negligence harmed not only health care workers but also patients going to hospitals and other health care settings where staff asked patients to remove their N95s or elastomeric respirators in order to put on a surgical mask provided by the healthcare institution. As a result of this, many patients in Ontario became infected while receiving care and some of those patients died as a result. Hospitals continue to tell patients to remove N95s and elastomeric respirators they come in with in order to put on a surgical mask despite outbreaks at hospitals and the government knowing that surgical masks would endanger patients, especially those with immunocompromised conditions.

As a result of the government's misconduct, workplace deaths and long-term injuries have become common in the health care field, among first responders and workers in congregate settings. Furthermore, the government's failure to properly distribute PPE has also contributed to the spread of COVID-19 to patients in hospitals and residents in long-term care homes where additional deaths occurred. A Toronto Star investigation titled "At least 860 people have died of COVID-19 in Ontario hospital outbreaks. What we now know about the 'unmitigated tragedy'" released on September 16, 2021 found that over 860 fatalities occurred among patients in Ontario hospitals that were exposed while they were in hospital.

Even after the CDC issued a press release in July 2021 to let the public know that COVID-19 vaccines no longer prevented transmission and that masks would be needed going forward in order to prevent workers from getting infected and passing that infection onto others, the Ontario government kept telling employers they didn't need to upgrade mask protections for workers and that they should force their employees to be vaccinated to help stop the spread of the virus in the workplace or terminate their employment. If the government was so concerned about workplace transmission, why did their plan to prevent workplace transmission continue to rely solely on vaccination status after this CDC announcement and not include a medical mask component which they knew that unlike vaccines, would prevent transmission.

A lot of workers lost their jobs under false pretenses after they were not given an alternative to vaccination despite the government having PPE readily available that they could use to prevent it and knowing the justification they were using was misleading. This could be considered as termination without cause and therefore those workers would be eligible for proper compensation for their dismissal or to be rehired.

Moreover, the government's failure to properly alert hospitals and long-term care homes to the presence of the stockpile of elastomeric respirators and the Ontario Health's recommendations to use them as N95 alternatives further highlights the negligence and disregard for the safety and well-being of essential workers or the damage done to the economy by disruptions along the domestic supply chain. This lack in transparency and disregard for the safety of workers is a violation of the Occupational Health and Safety Act and must be investigated so those responsible can be held responsible both criminally and through civil litigation.

The Ministry of Labour and the OPP have the power to lay charges against the government under the act, such as failing to provide a safe working environment, failing to provide the necessary personal protective equipment, and failing to ensure workers are informed of the hazards in the workplace. Any investigation should include all aspects of the government's actions, including their preparedness and response to the pandemic, their communication with employees as well as employers, their internal and external communication relating to the purchase of elastomeric respirators and N95s from 3M, their communications with me (Nicolas Smit), any communication regarding elastomeric respirators, as well as internal and external communication by hospitals and long term care homes about N95s and elastomeric respirators.

The government's decision not to properly distribute life saving PPE and to not alert all employers of the Ontario Health PPE recommendations undermines the public's trust in government. It is important that any investigation take into account the impact on workers and their families, and that they are provided with the necessary support and compensation. It is also important for the OPP to issue a press release and alert those with criminal cases as well as their lawyers that could be impacted by past and ongoing negligence of the Ontario government in regards to information provided in this letter and accompanying evidence so that those requesting full disclosure are not kept in the dark about information that could affect the outcome of the trials.

It is also important to note the potential long-term impacts on the health and well-being of the workers who were not provided with proper PPE. The failure to protect those workers not only resulted in multiple deaths and long-term injuries, but it also put them at a higher risk for long-term health complications, such as long Covid.

Furthermore, it is important to consider the broader societal implications of the government's failure to provide proper PPE. The spread of COVID-19 in workplaces not only posed a danger to the workers, but it also contributed to the overall spread of the virus in the community and put additional strain on the healthcare system.

The government's failure to protect workers not only put them at risk, but it also put the public in general in greater risk of harm. It is important to consider the impact of the government's actions on vulnerable populations. Many of the workers in long-term care homes and hospitals are frontline workers who disproportionately come from marginalized communities. The government's failure to protect these workers not only put their lives at risk, but also perpetuated systemic injustices.

It is crucial to remember that this is not just a matter of protecting the rights and well-being of workers, but also the safety of the public as a whole. The mishandling of PPE and failure to properly protect workers contributed to the spread of COVID-19 which, not only put the workers at risk, but also their families as well. Additionally, the government's actions may have hindered the ability of workers to provide essential services.

It is important to note that not only is this misconduct by the Ontario government a violation of the basic human right to proper protection in the workplace, but it also has far-reaching consequences for the entire province and ability to trust the government going forward. It is essential that a thorough investigation be conducted to hold the government accountable for their actions and to ensure that justice is served for the victims of this misconduct. Furthermore, it is crucial that due diligence is done to fully investigate the negligence in order to prevent such misconduct from happening again in the future.

Please note that by properly investigating and holding the government accountable for their actions, it sets a precedent for future incidents of misconduct and negligence. This sends a message that such actions will not be tolerated and will be met with consequences. Furthermore, a thorough investigation can uncover any systemic issues that may have contributed to the mishandling of PPE and prevent them from occurring in the future.

By properly investigating and holding the government accountable, it shows a commitment to transparency and accountability on the part of the Ministry of Labour and the OPP. This builds trust and confidence in these institutions and their ability to protect the rights and well-being of workers and the public.

Since some Ministry of Labour inspectors were at least partially aware of the problem and already quietly correcting it themselves by alerting workplaces about elastomeric respirators through word of mouth, refusing to fully investigate this gross misconduct by the government could be seen as a conflict of interest and sends a message that the safety and well-being of workers is not a priority and that those holding office, including the Premier and opposition critics are above the law when they commit similar actions that others are charged for.

Conclusion

Given the gravity of the situation and the far-reaching consequences of the government's actions, it is crucial that the OPP and Ministry of Labour conduct a comprehensive investigation to uncover the full extent of the misconduct and hold those responsible accountable. This includes not only those in leadership positions, but also any individuals or entities that played a role in the decision-making and implementation process. The investigation should also consider any potential criminal and civil charges that may be applicable.

Furthermore, it is crucial that any findings and recommendations from the investigation are made public and that steps are taken to ensure that such failures do not occur again in the future. This includes implementing measures to increase transparency and accountability in the procurement and distribution of PPE, as well as ensuring that proper protocols are in place to protect essential workers during pandemics. A proper investigation will not only bring justice for the victims of this misconduct but also prevent future misconduct from happening.

Not investigating or not holding those responsible accountable sends a message that it is okay to endanger the lives of workers even when the employer can easily eliminate the deadly risks they face and have the tools in their possession to do so. Moreover, the government should also consider compensating the families of those who lost their lives and those who were injured as a result of the government's actions. This should include both financial compensation and support for mental health and rehabilitation services.

At minimum, even if charges aren't filled, there needs to be an urgent attempt to properly inform all workers going forward of all the hazards in the workplace and of what is available to have the best opportunity to eliminate the risks associated with those hazards.

Since there are no longer PPE shortages, there is no longer an excuse for employers to not be properly protecting their workers with PPE for a virus that not only has the ability to kill and injure workers but can also harm or kill their family members if they bring the virus home from work.

Lastly, there should be a whistleblower system set up so that any worker who can't convince their union to expose negligence can have a place to turn too where their concerns can be taken seriously and investigated without fear of retribution. Unions were well aware of the problems, but they refused to effectively try and correct them or alert the public, police or Ministry of Labour to what was happening. Union leaders also choose not to inform their members about the importance of elastomeric respirators or that PPE which could protect them better than N95s was readily available but sitting unused for years.

Workers that are unionized had nowhere to turn too after their unions refused to fight for their health and safety or expose the negligence that was occurring. Due to the NDAs most health care workers sign as part of their employment contract, they cannot publicly speak out to expose widespread negligence they or their colleagues experience without risk to pay or position.

I have attached evidence of the widespread negligence from some of those involved and would be happy to provide more upon request including the recordings of some of the meeting I had with government officials.

Sincerely, Nicolas Smit

Nicolas Smit

Section A

Quick background to help understand the importance and implications of what occurred and some of the government officials and top politicians involved

Section B

Government recommendations that prove the government was well aware of the importance of elastomeric respirators, that they provided significantly better protection than surgical masks and that they were not dangerous as the public is still lead to believe

Section C

Personal communication with government officials and top politicians plus what politicians and political parties knew of the negligence as well as the steps needed to correct it

Section D

Evidence provided at government inquires and parliamentary committee meetings showing the government was repeatedly told about the need to publicly promote the importance of elastomeric respirators and the need to provide them to healthcare workers to stop the preventable deaths and injuries from continuing to occur

Section E

Unpublished government studies and presentations showing the government knew Covid was spread by airborne transmission and that the risk of infection would be minimized by using tight fitting respirators like N95s or elastomeric respirators

Section F

Unions knowledge of the ongoing negligence and their refusal to alert the public and their own members to it

Section G

Misinformation spread by journalists citing the government sources as fact and news investigations mentioning the negligence

Section H

Additional info and concluding letter

Section A

Quick background to help understand the importance and implications of what occurred and some of the government officials and top politicians involved

1

CDC poster indicating how surgical masks do not offer reliable respiratory protection, that N95s should not be reused but that healthcare workers can safely reuse elastomeric respirators. It also shows how elastomeric respirators can filter viruses better than N95s.

Source: https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

2

June 2020 email Nicolas Smit received from David Morgado, Doug Ford's Executive Assistant, to let Nicolas know the internal investigation at Doug Ford's office resulted in the purchase of 100,000 elastomeric respirators with plans for immediate distribution to help quickly eliminate N95 shortages hospitals and long term care homes faced.

Source: Email communication

3

CDC webpage from December 2020 explaining how CDC studies showed even uncovered exhalation valves provided better protection for those around the wearer (source control) than surgical masks did and that the exhalation could be easily covered so it protected those around the wearer as well as respirators without exhalation valves.

Source: https://www.cdc.gov/niosh/docs/2021-107/default.html

4

4 page letter from the CDC Director's Office to Nicolas Smit written by NIOSH Director John Howard about the importance of elastomeric respirators for infection control and examples of where the CDC was promoting their pandemic plan to put them into widespread use to quickly eliminate N95 shortages. This letter was in response to an email Nicolas had sent the CDC Director in August 2022.

Source: CDC letter to Nicolas Smit

5

April 11, 2020 Ontario Health PPE Guidelines for hospitals explaining how hospitals should only use expired N95s or reuse N95s as a last resort if nothing else was available and that hospitals should use elastomeric respirators as safe N95 alternatives

Source: https://www.ontariohealth.ca/sites/ontariohealth/files/2021-02/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

6

OCHU CUPE Union leader Michael Hurley tweet from June 2021 publicly explaining how there is no excuse for the province to lock up 100,000 elastomeric respirators since using the stockpile would mean the elimination of infections in health care settings.

Source:
https://twitter.com/hurleyochucupe/status/1409994240785096706?s=61&t=09OgtL8UnAFkit0zMzRd0w

7

OCHU CUPE Union leader Michael Hurley publicly explaining how CUPE had repeatedly asked the NDP, Liberals and Green Party to actively speak up and engage the government to ensure the locked up elastomeric respirators would finally be distributed.

Source:
https://twitter.com/hurleyochucupe/status/1428837078603808770?s=61&t=09OgtL8UnAFkit0zMzRd0w

8

July 3, 2022 New York Times investigation on elastomeric respirators based on resources collected by Nicolas Smit and which Nicolas is quoted in as well. It explains how despite offering better protection than N95s, the failure to promote the CDC recommendations to use elastomeric respirators as N95 alternatives along with the decision to abandon the CDC pandemic plan to put them into widespread use lead to 1000s of preventable deaths among health care workers.

Source: https://www.nytimes.com/2022/07/03/health/covid-ppe-masks-health-care.html

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CBC investigation released June 10, 2021 where Ontario Health officials confirm how the province had kept 100,000 elastomeric respirators locked up since June of 2020 and how in addition to the 100,000 that remain locked up, there were supposed to be 22,000 in use by Ontario hospitals which unions disputed wasn't happening.

Source: https://www.cbc.ca/news/canada/ottawa/ottawa-covid-masks-protection-1.6053953

10

December 10, 2020 Radio Canada investigation with union leaders and Nicolas Smit explaining how hospitals and long term care homes actively prevented staff from using elastomeric respirators due to the failure by the government to ensure the Ontario Health recommendations to use them as N95 alternatives were well known. The news article also explains how the province confirmed there was a large stockpile of unused elastomeric respirators

Source: https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

11

April 22, 2020 news article by Sudbury.com where NDP MPP Health Critic France Gelinas and NDP MP Carol Hughes are interviewed for their help getting Nicolas Smit's idea to get both levels of government to look into using elastomeric respirators as N95 alternatives looked at by the government. Ms. Gelinas confirms the government had already proved that elastomeric respirator would guarantee protection for the wearer. She explains that while surgical masks couldn't protect those wearing them from infection, that is what the province would use anyways instead of elastomeric respirators since the worry was not preventing workers from becoming infected but instead prevented workers from infecting others.

Source: https://www.sudbury.com/local-business/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

12

November 25, 2020 Sudbury Star news article with NDP MP Carol Hughes spreading misinformation that elastomeric respirators are too dangerous to use because they have an exhalation valve. The article confirms that Ontario Health PPE guidelines explains how to cover the valve to remove the assumed danger.

Source: https://www.thesudburystar.com/news/local-news/sudbury-engineer-raising-awareness-about-n95-mask-alternative

13

June 28, 2020 Facebook Messanger private message from NDP MPP France Gelinas to Nicolas Smit letting him know that Ontario Health had just let her know that the government purchased 100,000 elastomeric respirators with plans to distribute them to help solve the N95 shortage.
Source: Facebook Messenger private message

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July 20, 2020 Facebook post by NDP MPP France Gelinas letting her Facebook followers know the government had bought 100,000 elastomeric respirators to help protect healthcare workers.

Source:
https://www.facebook.com/france.gelinas.92/posts/10158491700048349

15

February 22, 2021 tweet by Liberal MP Ryan Turnbull on how the negligence by the Ontario government to keep 100,000 elastomeric respirators locked up was hard to ignore and he questions how many lives could've been saved had the PPE not purposely been withheld from frontline workers.

Source: https://twitter.com/TurnbullWhitby/status/1364064116810387457

16

February 22, 2021 subsequent tweet by Liberal MP Ryan Turnbull on how appalled he was that the Ontario government took billions in federal assistance to help buy PPE for hospitals and long term care homes but did nothing to prepare for the second wave and then watched people die in long term care while pretending the government had everything under control but delayed requested for help and instead focused on protecting long term care homes from being sued for the negligence that occurred that lead to the preventable deaths. Ryan also shared the letter Ontario Liberal Health Critic John Fraser received from Ontario Minister of Health indicating how the public couldn't be told about the importance of elastomeric respirators or the recommendations to use them as N95 alternatives since the public wasn't properly educated.

Source: https://twitter.com/TurnbullWhitby/status/1364068590677331969

17

February 13, 2021 tweet by Liberal MP Ryan Turnbull about the province of Ontario having a stockpile of elastomeric respirators that could prevent 99% of infections. Ryan asks why the federal government doesn't recommend elastomeric respirators like Quebec and Ontario did.

Source: https://twitter.com/TurnbullWhitby/status/1360637001523986433

18

March 24, 2021 tweet by Liberal MP Ryan Turnbull letting Nicolas Smit know that he forwarded the information on the importance of elastomeric respirators to federal Ministers and that he had spoken with the Ontario Liberal caucus about them as well. He then explains how he agrees with Nicolas Smit that healthcare workers should not continue to be left in inadequate PPE and deserve to have the best protection available.

Source: https://twitter.com/TurnbullWhitby/status/1374736466266492930

19

March 1, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit about how he had repeatedly spoken with Minister Anand and the Minister of Health about the widespread negligence that kept occurring around elastomeric respirators. He then asks Nicolas to write a detailed email with as much information as possible and that he would share it with the Ministers along with a message from him.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit

20

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit explaining that he had brought up the importance of elastomeric respirators at the National Level 4 times including all the information Nicolas had shared with him. Ryan says how he explained how the federal government needs to put pressure on the province to use the locked up PPE stockpile and that the federal government should also be using these to better protect workers. He also explains how he had just went to the emergency room and saw that everyone was still wearing surgical masks.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit

21

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit asking who sets the policy for PPE in healthcare settings because everyone was well aware at that point that Covid was airborne and not spread by droplets like the government kept telling the public.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit thanking Nicolas for everything he did to protect healthcare workers and lets Nicolas know that he's going to try to get other Liberal MPs to sign an internal letter to put internal pressure on the government to correct the widespread negligence around elastomeric respirators and finally apply public pressure so that the Ontario government distributes the locked up elastomeric respirators.

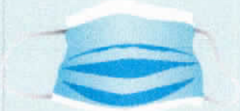
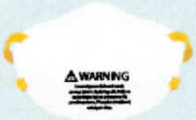
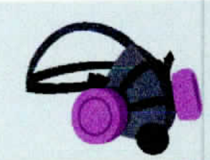
Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit

1

CDC poster indicating how surgical masks do not offer reliable respiratory protection, that N95s should not be reused but that healthcare workers can safely reuse elastomeric respirators. It also shows how elastomeric respirators can filter viruses better than N95s.

Source: https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

Understanding the Difference

	 **Surgical Mask**	 **N95 Respirator**	 **Elastomeric Half Facepiece Respirator**
Testing and Approval	Cleared by the U.S. Food and Drug Administration (FDA)	Evaluated, tested, and approved by NIOSH as per the requirements in *42 CFR Part 84*[*]	Evaluated, tested, and approved by NIOSH as per the requirements in *42 CFR Part 84*
Intended Use and Purpose	Fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids. Protects the patient from the wearer's respiratory emissions.	Reduces wearer's exposure to particles including small particle aerosols and large droplets (only non-oil aerosols)	Reusable device made of synthetic or rubber material
Face Seal Fit	Loose-fitting	Tight-fitting	Tight-fitting
Fit Testing Requirement	No	Yes	Yes
Designed for Reuse	No	No	Yes
User Seal Check	No	Yes. Required each time the respirator is donned (put on)	Yes. Required each time the respirator is donned (put on)
Filtration	Does NOT provide the wearer with a reliable level of protection from inhaling smaller airborne particles and is not considered respiratory protection	Filters out at least 95% of airborne particles including large and small particles	May be equipped with filters that block 95%, 99%, or 100% of very small particulates. Also may be equipped to protect against vapors/gases.
Leakage	Leakage occurs around the edge of the mask when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales
Use Limitations	Disposable. Discard after each patient encounter.	Ideally should be discarded after each patient encounter and after aerosol-generating procedures. It should also be discarded when it becomes damaged or deformed; no longer forms an effective seal to the face; becomes wet or visibly dirty; breathing becomes difficult; or if it becomes contaminated with blood, respiratory or nasal secretions, or other bodily fluids.	Reusable and must be cleaned/disinfected and stored between each patient interaction

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[*] As of July 2, 2018, NIOSH evaluates N95 FFRs intended for use in healthcare for biocompatibility, flammability, and fluid resistance to ensure conformity to relevant standards during the approval process. These tasks were previously performed by the FDA.

Resources:
Hospital Respiratory Protection Program Toolkit, *http://www.cdc.gov/niosh/docs/2015-117/pdfs/2015-117.pdf*
Implementing Hospital Respiratory Protection Programs: Strategies from the Field, *https://www.jointcommission.org/assets/1/18/Implementing_Hospital_RPP_2-19-15.pdf*

Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

This information provides clarification regarding respirator and mask use in workplaces in which employees are exposed to respiratory hazards, it is not specific for the COVID-19 pandemic.

June 2020 email Nicolas Smit received from David Morgado, Doug Ford's Executive Assistant, to let Nicolas know the internal investigation at Doug Ford's office resulted in the purchase of 100,000 elastomeric respirators with plans for immediate distribution to help quickly eliminate N95 shortages hospitals and long term care homes faced.

Source: Email communication

From: **Morgado, David (OPO)** David.Morgado2@ontario.ca
Subject: **Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet**
Date: **Jun 29, 2020 at 1:21:30 PM**
To: **smitnicolas@hotmail.com**

Please see below response.

P100 Respirators – Background and Current Status

Ontario does not prohibit the use of P100 respirators. Clinical guidance in Ontario, from the Chief Medical Officer of Health, is that the P100 is an alternative, equivalent product to the N95 respirator.

Health Guidance for alternative equivalent product to the N95 Masks:

Health Canada guidance lists P100 respirators as an alternative, equivalent product to the N95 masks. Specifically, Health Canada advises the following:

> "During the COVID-19 outbreak when medical-grade N95 or equivalent respirators aren't available, health care institutions may, at their discretion, purchase and use:
> - commercial-grade N95 (or P95 and similar) respirators
> - equivalents such as commercial-grade KN95 (or KP95) respirators
> - **other alternative, equivalent commercial-grade filtering facepiece respirators that are at least as protective as the commercial-grade N95, such as the N99, N100, P95, P99, P100, R95, R99, and R100 respirators.**
>   - P100 respirators are filtering, oil-resistant industrial respirators. These are similar to the N95 respirators, but their filter performance of airborne particles is greater than 95% (99.97%).
>   - N100 respirators have the same filtration performance as the P100 but are not oil resistant (similar to the N95)." (**emphasis added**)

Ontario's Chief Medical Officer of Health guidance for COVID+ and airborne precautions in acute care settings states "**N95 fit tested respirator, or approved or equivalent or better protection.**"

Use of 7500 series Half-Faced Elastomeric Respirators with P100 filters in Ontario:

During the course of the COVID-19 pandemic, the Ontario Government has looked towards sourcing alternative models to traditional N95 respirators.

This pursuit has included alternative NIOSH approved disposable models and reusable formats such as Elastomeric and Power Air Purifying Respirators (PAPR).

To date, the Province has purchased 100,000 units of **7500 series Half-Faced Elastomeric Respirators with 100,000 P100 filters**. A first shipment of 25,000 units arrived in Toronto and are in the MOEC warehouse week. The remainder of these respirators are expected to arrive by the end of July 2020. Ontario Health is in the process of determining how to allocate these shipments to hospitals.

Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.
Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

Thanks,

David Morgado

Executive Assistant to the Premier of Ontario
Office of the Premier of Ontario

From: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Sent: June 29, 2020 12:12 AM
To: Morgado, David (OPO) <David.Morgado2@ontario.ca>
Subject: FW: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

See below.

Rana Shamoon
Director, Health Policy I Office of the Premier

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 26, 2020 10:24 PM
To: Silva, David (MGCS) <David.Silva@ontario.ca>; MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: Re: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Thank you very much, David.

Adding Rana Shamoon for her awareness.

P

Get Outlook for iOS

From: Silva, David (MGCS) <David.Silva@ontario.ca>
Sent: Friday, June 26, 2020 6:53:28 PM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Good Evening Allan and Patrick,

Responding on Heidi's behalf with the following update provided by the teams at MGCS, MOH and OH. Please let us know if you have any questions.

David

P100 Respirators – Background and Current Status

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> - **other alternative, equivalent commercial-grade filtering facepiece respirators that are at least as protective as the commercial-grade N95,**

such as the N99, N100, P95, P99, P100, R95, R99, and R100 respirators.

- P100 respirators are filtering, oil-resistant industrial respirators. These are similar to the N95 respirators, but their filter performance of airborne particles is greater than 95% (99.97%).
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Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.

Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

From: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Sent: June 26, 2020 9:15 AM
To: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>; Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Morning Patrick,

This is news to me. Let me ask the team for an update for us both.

Heidi - Can you coordinate an update w Mel and Peter?

A

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 24, 2020 11:06 AM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Cc: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Subject: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Hi Allan,

Rana Shamoon and I have received outreach regarding HC review of the P100 Respirator (please see attached).

The outreach suggests that Ontario has prohibited the use of this mask type, further suggesting that Ontario hospitals have abundant inventories of this type of mask. The issue HC is raising is that no application has been received to review/approve this product.

Are you able to help bring clarity to this?

Thank you for your help.

P

Patrick Sackville
Executive Director of Policy
Office of the Premier of Ontario
Patrick.Sackville@Ontario.ca

---------- Forwarded message ---------
From: **Nicolas Smit** <smitnicolas@hotmail.com>
Date: Tue, Jun 16, 2020 at 9:50 AM
Subject: Health Canada Approval of P100 Respirators

Hi XXXXXXX,

There is a serious issue in regards to PPE for health care workers which have just been approved by Health Canada that should get Doug Ford's immediate attention. I am forwarding this email from Health Canada which indicates why they have decided to approve P100 respirators 10 weeks after the Ontario government started saying they were dangerous and told hospitals they should not use their inventory of P100s under any circumstance.

This is a New York Time articles explaining P100 respirators in detail and why the US has used them for so long.

https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

This is a Northern Ontario Business article where Ontario Health Critic France Gelinas explains that Ontario hospitals have a lot of P100 respirators in their inventories but that the government has decided to not allow hospital staff to use them.

https://www.northernontariobusiness.com/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

Here is an article that just came out about a month long test using thousands of P100s in Pittsburg hospitals.

https://www.mcknights.com/news/clinical-news/use-of-elastomeric-respirators-could-reduce-providers-need-for-n95-masks/

I am hoping Doug Ford and his team can look into this, talk to Health Canada and France Gelinas. I believe Doug Ford needs to hold a press conference to announce this new option for health care workers in hospitals and long term homes because there has been a lot of misinformation accidentally spread by the government and this needs to be addressed so that P100 are not feared.

Hospitals already have 10,000s of P100 respirators available so with a mandate from Doug Ford, front line workers could immediately have access to enough PPE to reduce the pressure on the system and lessen the worries of many Canadians. This will give Doug a huge win and give the province a boost of confidence that the virus is now under more control.

Kind Regards,

Nicolas Smit
46 Mary Ave
Naughton, On
P0M 2M0

Cell: 7056269863

Sent from my iPhone

Begin forwarded message:

From: "Boudreau, David (HC/SC)" <david.boudreau@canada.ca>
Date: June 12, 2020 at 10:28:32 AM EDT
To: "smitnicolas@hotmail.com" <smitnicolas@hotmail.com>
Subject: 20-108252-127 Response from the Medical Devices Directorate, Health Canada / Réponse de la Direction des instruments médicaux, Santé Canada

Hello, Bonjour, Mr. Smit,

Please see my attached response in regards to your June 8th correspondence.

Best regards,

David Boudreau, ing.
A Director General, Medical Devices Directorate
Health Products and Food Branch
Health Canada / Government of Canada
david.boudreau@canada.ca / Tel: 819-639-4117

Directeur général int., Direction des instruments médicaux
Direction générale des produits de santé et des aliments
Santé Canada / Gouvernement du Canada
david.boudreau@canada.ca / Tél: 819-639-4117

3

CDC webpage from December 2020 explaining how CDC studies showed even uncovered exhalation valves provided better protection for those around the wearer (source control) than surgical masks did and that the exhalation could be easily covered so it protected those around the wearer as well as respirators without exhalation valves.

Source: https://www.cdc.gov/niosh/docs/2021-107/default.html

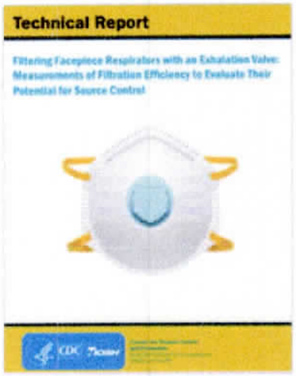
Promoting productive workplaces through safety and health research / NIOSH

Filtering Facepiece Respirators with an Exhalation Valve

DHHS (NIOSH) PUBLICATION NUMBER 2021-107

DECEMBER 2020

This technical report summarizes research undertaken by the National Personal Protective Technology Laboratory (NPPTL) to provide improved science-based recommendations on the use of filtering facepiece respirators (FFRs) with an exhalation valve. FFR models with an exhalation valve are thought to increase the wearer's comfort at high work rates and be suitable for longer periods of use. However, respiratory secretions expelled by wearers may exit along with air through the exhalation valve. A concern with FFRs with an exhalation valve is that individuals may spread disease if unfiltered, virus-laden aerosols pass through the valve. Therefore, the question has emerged about the effectiveness of using an FFR with an exhalation valve for source control—i.e., to filter respiratory secretions to prevent disease transmission to others—and whether the valve should be covered with a surgical mask, procedure mask, or a cloth face covering that does not interfere with the respirator fit.



Technical Report

Filtering Facepiece Respirators with an Exhalation Valve: Measurements of Filtration Efficiency to Evaluate Their Potential for Source Control

The findings in this report are based on tests of 13 FFR models from 10 different manufacturers. These findings show that FFRs with an exhalation valve provide respiratory protection to the wearer and can also reduce particle emissions to levels similar to or better than those provided by surgical masks, procedure masks, or cloth face coverings. This study also shows that modifications to these respirators can further reduce particle emissions. Specifically, the use of an electrocardiogram pad or surgical tape secured over the valve from the inside of the FFR can provide source control similar to that of an FFR with no exhalation valve. These findings have important implications for guidance on source control and mitigation.

Filtering Facepiece Respirators with an Exhalation Valve: Measurements of Filtration Efficiency to Evaluate Their Potential for Source Control 2021-107 [PDF – 922 KB]

Suggested Citation

NIOSH [2020]. Filtering facepiece respirators with an exhalation valve: measurements of filtration efficiency to evaluate their potential for source control. By Portnoff L, Schall J, Brannen J, Suhon N, Strickland K, Meyers J. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2021-107. DOI: https://doi.org/10.26616/NIOSHPUB2021107

Page last reviewed: December 7, 2020
Content source: National Institute for Occupational Safety and Health

4

4 page letter from the CDC Director's Office to Nicolas Smit written by NIOSH Director John Howard about the importance of elastomeric respirators for infection control and examples of where the CDC was promoting their pandemic plan to put them into widespread use to quickly eliminate N95 shortages. This letter was in response to an email Nicolas had sent the CDC Director in August 2022.

Source: CDC letter to Nicolas Smit

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
National Institute for Occupational
Safety and Health (NIOSH)
395 E Street, S.W.
Suite 9200, Patriots Plaza
Washington, D.C. 20201
PHONE: (202) 245-0625
FAX: (202) 245-0628

December 27, 2022

Nicolas Smit
Executive Director
American Mask Manufacturer's Association (AMMA)
nicolas@ammaunited.org

Dear Mr. Smit:

Thank you for contacting Centers for Disease Control and Prevention (CDC) Director Rochelle P. Walensky, MD, MPH, and Chief of Staff Sherri Berger, regarding media coverage on mask and respirator use during the coronavirus disease 2019 (COVID-19) pandemic and your concern about the information CDC has shared regarding elastomeric respirators, also known as elastomeric half mask respirators (EHMRs). I am responding on behalf of Dr. Walensky and Ms. Berger.

We appreciate your concerns and the extensive background you provided and would like to respond by describing and affirming our ongoing work and to share appropriate information on EHMRs.

For over a decade, EHMRs have provided significant cost savings in several healthcare organizations (for example, the University of Maryland and the Texas Center for Infectious Disease). However, there remains strong reluctance in many healthcare workplaces to use EHMRs because most facilities are accustomed to filtering facepiece respirators (FFRs). Nevertheless, CDC's National Institute for Occupational Safety and Health (NIOSH) has been instrumental in conducting outreach, interventions, and expedited approvals as well as supporting research to advance the use of NIOSH Approved® EHMRs in healthcare settings.

CDC proactively and consistently informed the public about EHMRs prior to and during the pandemic. Below are select actions CDC took to share information over the last few years:

- CDC first published the webpage, Strategies for Optimizing the Supply of N95 Respirators, in March 2020. At that time, EHMRs were included as an alternative to N95® FFRs.

- In June 2020, CDC NIOSH led efforts to update personal protective equipment supply optimization strategies, Elastomeric Respirators: Strategies During Conventional and Surge Demand Situations to indicate to federal, state, and local public health officials and respiratory protection program managers, and other interested parties, that reusable EHMRs are a viable alternative to N95 FFRs, not just during surge demands but even as a routine, conventional strategy.

- CDC NIOSH has prioritized and worked directly with manufacturers of EHMRs to evaluate and approve new design options that protect healthcare workers and act as reliable source control.

  - These models have been welcomed by those in healthcare settings.
  - These new models without exhalation valves or with filtered exhalation valves can substantially reduce respirator supply chain vulnerabilities and increase the inventory of respirators for healthcare workers.
  - Seven manufacturers have produced a total of 15 NIOSH Approved® EHMRs with no exhalation valves (number per manufacturer is identified in parentheses):
    - MSA (8)
    - Dentec Safety Specialists (2)
    - GVS Filter Technology (1)
    - AirBoss Defense (1)
    - Reusable Respirators LLC (1)
    - Honeywell International Inc. (1)
    - Sleepnet Corporation (1)
    - one manufacturer has produced six EHMR models with a filtered exhalation valve—3M (6)

- CDC NIOSH sponsored several webinars to further inform healthcare workers about EHMRs as alternatives to N95 FFRs. The first webinar was held on April 8, 2020, Elastomeric Respirators for U.S. Healthcare Delivery, and several others have been held since April 2020.

- CDC NIOSH representatives served on the Department of Health and Human Services' Assistant Secretary for Preparedness and Response's (on July 22, 2022, it was renamed the Administration for Strategic Preparedness and Response) Healthcare Resilience Working Group throughout 2020 and 2021. This working group presented various public webinars supporting the use and increased awareness of reusable respirators and published a fact sheet (Elastomeric Half-Mask Respirators and Powered Air-Purifying Respirators in Healthcare and Emergency Medical Service Settings).

- Externally, CDC NIOSH presented on EHMRs at webinars hosted by the Food and Drug Administration; the American College of Occupational and Environmental Medicine; The National Emerging Special Pathogens Training and Education Center Virtual Summit; The CLEAN Summit; the Organization for Safety, Asepsis, and Prevention; the Association for Professionals in Infection Control and Epidemiology; the American Industrial Hygiene Association (AIHA); Association of Occupational Health Professionals, Johns Hopkins University; Millersville University; the California Industrial Hygiene and Sacramento AIHA Summit; the International Society for Respiratory Protection; American College of Medical Toxicology; and at NIOSH's annual Respiratory Protection Week webinars.

- CDC NIOSH posted several NIOSH Science Blogs to further educate respirator users about EHMRs. One blog was published on September 8, 2020, Supplementing the Supply of N95s with Reusable Elastomeric Half Mask Respirators, and another was posted on March 1, 2021, Advancements in Elastomeric Respirator Technology for Use as Source Control.

- CDC NIOSH published an Elastomeric Half Mask Respirator Resources webpage to share resources with the public related to EHMRs, including relevant publications, blogs, and webinars.

- CDC NIOSH's National Personal Protective Technology Laboratory (NPPTL) and the Strategic National Stockpile (SNS) collaborated to increase elastomeric respirator availability for healthcare workers and better understand the challenges of use and implementation.
    - NIOSH published a Federal Register Notice in September 2020 to solicit input on the potential increased use of EHMRs in health delivery settings.
    - Ninety-nine organizations responded to the FRN, with 50 interested in receiving EHMRs from the SNS. These organizations also volunteered to provide long-term feedback on EHMR use to NIOSH.
    - In 2021, the SNS purchased 375,000 NIOSH Approved EHMRs without exhalation valves or with filtered exhalation valves, where NIOSH NPPTL staff reviewed the request for proposals and served on the Technical Evaluation Panel.
    - Once these EHMRs were procured, 95,679 were provided to the FRN partnering organizations. Fifty organizations, including 22 in healthcare settings and 28 first responder organizations, initially volunteered to participate in NIOSH research.
    - Longitudinal demonstration studies began in September 2021 with data collection concluding at the end of 2022. Data include surveys with healthcare workers using EHMRs and multiple interviews with those employees who are overseeing the deployment of EHMRs.
    - Under this project, NIOSH collaborated with The Joint Commission to draft a blog for their website to discuss the use of EHMRs during the pandemic to inform future routine use in healthcare settings. This blog was published on September 21, 2022: NIOSH Continues to Evaluate Use of EHMRs During COVID-19 Pandemic to Inform Future, Routine Use.

- In 2011, NIOSH initiated an effort to evaluate the possibility of increased use of reusable respirators in healthcare, both in the context of conventional use, as well as in crisis situations, including public health emergencies. That effort was expanded in 2014 with a NIOSH grant to the University of Maryland to explore real-world use of EHMRs across multiple patient care environments, from which four publications were generated. CDC NIOSH has a number of studies underway to explore EHMR use and disinfection and provide best practice guidelines. In 2018, NIOSH NPPTL issued three five-year contracts to Emory University, the University of Texas, and Wayne State University to evaluate rapid fit testing, decontamination, and clinical use of EHMRs. In 2022, a contract was awarded to the University of Maryland to further the EHMR research and evaluate EHMRs without exhalation valves and an innovative EHMR prototype in clinical settings.
    - We have confirmed that these products can be rapidly fit tested.
    - We are in the process of validating the Bessesen protocol and identifying alternative disinfection strategies.

    - A number of clinical studies are underway to better understand the barriers to effective use for routine patient care.
    - We partnered with the University of Maryland and Allegheny Health Network to develop best practice guidelines in EHMR use in healthcare. These guidelines are available for facilities to use as they explore the utility of EHMRs for their workers. These draft guidelines for hospitals have shown that EHMR integration is feasible (Chalikonda et al., 2020; Hines et al., 2021). Our ultimate intent is to provide federal guidelines building upon our previously published and co-branded Respiratory Protection Hospital Toolkit and the lessons learned from our ongoing collaborative effort with partners.

- CDC NIOSH and its funded partners published manuscripts on the use of EHMRs during public health emergencies.
  - Elastomeric half mask respirators: An alternative to disposable respirators and a solution to shortages during public health emergencies
    Greenawald LA; Haas EJ; D'Alessandro MM. (2021). Journal of the International Society of Respiratory Protection. 2021 Dec; 38(2):74-91
  - Implementation Guide to Support Use of Elastomeric Half Mask Respirators in Healthcare
    Hines S, Thurman P, McDiarmid M. University of Maryland Implementation Guide, February 3, 2021
  - Using public feedback about the use of elastomeric half mask respirators to inform a national deployment study within health settings
    Haas EJ; Greenawald LA; Furek A; D'Alessandro MM. (2021). Journal of the International Society of Respiratory Protection. 2021 Dec; 38(2):92-106
  - Implementation of an elastomeric mask program as a strategy to eliminate disposable N95 mask use and resterilization: results from a large academic medical center
    Chalikonda S, Waltenbaugh H, Angelilli S, Dumont T, Kvasager C, Sauber T, Servello N, Singh A, Diaz-Garcia R. (2020). Journal of the American College of Surgeons. 2020 Sep 1;231(3):333-8
  - Training and Fit Testing of Health Care Personnel for Reusable Elastomeric Half-Mask Respirators Compared With Disposable N95 Respirators
    Pompeii, L A, Kraft, CS, et al. JAMA Research Letter. March 25, 2020.
  - Cleaning and Disinfection Perceptions and Use Practices Among Elastomeric Respirator Users in Healthcare
    Hines, SE et al. Workplace Health and Safety. *Submitted for publication.*
  - User acceptance of reusable respirators in healthcare
    Hines, SE, Brown, C, Oliver, M, Gucer, P, Frisch, M, Hogan, R, Roth, T, Chang, J, McDiarmid, M. American Journal of Infection Control. 2019:47:648-655.
  - Storage and Availability of Elastomeric Respirators in Health Care
    Hines, SE, Brown, C, Oliver, M, et al. Health Security. 2019: 17:DOI:10.1089/hs.2019.0039

As the above examples demonstrate, CDC NIOSH has consistently informed the public and the healthcare community about the availability and utility of EHMRs, and we have done so through diverse collaborative approaches to ensure a sweeping and effective dissemination strategy. As part of our mission, we will continue to do so to ensure that the most current scientific information is available to make informed decisions about EHMR options.

If you have questions regarding our current and planned activities on EHMR usage and our supporting research, please reach out to Maryann D'Alessandro, PhD, PC, ACC, Director, NIOSH NPPTL, at mdalessandro@cdc.gov.

Sincerely,

John Howard, M.D.
Director

5

April 11, 2020 Ontario Health PPE Guidelines for hospitals explaining how hospitals should only use expired N95s or reuse N95s as a last resort if nothing else was available and that hospitals should use elastomeric respirators as safe N95 alternatives

Source: https://www.ontariohealth.ca/sites/ontariohealth/files/2021-02/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

Ontario
Health

Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic

Recommendations from Ontario Health

Release date: April 11, 2020

Recommendations for Health Care Organizations

Please consider the following conservation strategies to extend the supply of PPE and to ensure the long-term sustainability of PPE during the COVID-19 pandemic. This page provides an overview of the key items—more information is provided in their respective sections.

- **To help extend the supply of PPE, switch to reusable PPE options wherever they can be safety implemented:**
    - Collaborate with your organization's occupational health and safety, IPAC and infectious disease specialists to develop appropriate protocols for the use of reusable elastomeric respirators, which are a reusable equivalent to the more commonly known disposable N95 respirator. Organizations without these key specialist groups should consider consulting with experts from their region
    - Consider the use of powered air purifying respirators (PAPRs) in certain situations where health care workers will be wearing protective equipment for prolonged periods of time and where appropriate training can be provided (e.g., in the intensive care unit)
    - Establish procedures for fit-testing (where required) and cleaning/disinfecting and provide education and training resources for health care workers on safe use of reusable PPE options. If an employee presents with their own reusable respirator, occupational health and safety units need to be engaged in order to support safe usage
    - We support the efforts to initiate acquisition of reusable PPE options as a sustainable contingency approach

- **Use certified PPE from other medical settings and non-medical settings:** Obtain and use certified PPE products from other medical settings that no longer need them and certified products from commercial, non-medical settings (e.g., industry-related settings). This includes disposable and reusable N95 respirators and other types of National Institute of Occupational Safety and Health (NIOSH) certifications that provide protection from the SARS-CoV-2 virus, which includes: N99, N100, R95, R99, R100, P95, P99, P100.

- **Use 3D-printed face shields for eye protection, if needed:** 3D-printed face shields are an appropriate alternative to traditional face shields for eye protection. Ensure they meet the standards[5] set out by Health Canada

- **Extend the use of existing PPE:** Ensure that health care workers caring for cohorted patients with suspected or confirmed COVID-19 are following extended-use recommendations as appropriate for their setting

- **Use of expired products:** Take stock and inspect any expired N95 respirators (disposable)[6] and any other stock of expired PPE
    - Expired N95 respirators (disposable) and other PPE that have been stored in accordance with manufacturers' storage conditions require inspection to ensure they are not damaged and may be used when regular supplies are depleted

- **Limited reuse:** Ensure that health care workers are following limited-reuse recommendations as appropriate for their setting

1. Recommendations on Procuring Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic and in an effort to maintain the long-term sustainability of PPE, shifting from disposable PPE to reusable PPE options should be considered in your contingency plans.

Recommendations for health care organizations

- To help extend the supply of PPE, switch to reusable PPE options wherever they can be safety implemented:
    - Collaborate with your organization's occupational health and safety, IPAC and infectious disease specialists to develop appropriate protocols for the use of reusable elastomeric respirators, which are a reusable equivalent to the more commonly known disposable N95 respirator. Organizations without these key specialist groups should consider consulting with experts from their region
    - Consider the use of powered air purifying respirators (PAPRs) in certain situations where health care workers will be wearing protective equipment for prolonged periods of time and where appropriate training can be provided (e.g., in the intensive care unit)
    - Establish procedures for fit-testing (where required) and cleaning/disinfecting and provide education and training resources for health care workers on safe use of reusable PPE options. If an employee presents with their own reusable respirator, occupational health and safety units need to be engaged in order to support safe usage
    - We support the efforts to initiate acquisition of reusable PPE options as a sustainable contingency approach

- Use certified PPE from other medical settings and non-medical settings:
    - Obtain and use certified PPE products from other medical settings that no longer need them and certified products from commercial, non-medical settings (e.g., industry-related settings). This includes disposable and reusable N95 respirators and other types of National Institute of Occupational Safety and Health (NIOSH) certifications that provide protection from the SARS-CoV-2 virus, which includes: N99, N100, R95, R99, R100, P95, P99, P100.

- Use 3D-printed face shields for eye protection, if needed:
    - 3D-printed face shields are an appropriate alternative to traditional face shields for eye protection
    - Ensure they meet the standards[5] set out by Health Canada

A. Use Reusable PPE Options

As described in Table 1 (below), the following PPE are reusable: elastomeric respirators, cloth isolation gowns, reusable eye protection (goggles and face shields), and PAPRs.

Reusable refers to the ability for a product to be used repeatedly, with validated methods for cleaning and/or disinfection between uses

Table 1. Types of PPE with reusable options

Type of PPE	**Description**
N95 respirator equivalent: **Reusable elastomeric respirators (half-mask and full facepiece)**	• We recommend switching to reusable elastomeric respirators, wherever possible. If fit-tested and properly cleaned and disinfected between uses, reusable elastomeric respirators (half-mask or full facepiece) are as effective as disposable N95 respirators • Reusable elastomeric respirators differ from disposable N95 respirators in that some users may experience issues with comfort/bulkiness, interference with communication, and some people may feel claustrophobia or anxiety • Use of this type of reusable respirator needs the support from local administrative/occupation health and safety teams to ensure fit-testing and to support standardized cleaning protocols. If an employee presents with their own respirator, occupational health and safety units needs to be engaged to support safe usage • The ideal way to disinfect these respirators is to submerge them in water and bleach. However, the use of water and bleach is not practical between patients. As an interim option, the exterior surface can be cleaned using organization-approved disinfectant wipes (alcohol, quaternary ammonia, hydrogen peroxide, or bleach).[7] Refer to the manufacturer's instructions on cleaning and disinfection • Pay special attention to the appropriate handling and reuse of potentially contaminated detachable filters. Some detachable filters have exposed fibers that present a self-contamination hazard; this type of filter is not recommended unless it can be safely discarded. Do not get the cartridges and filters wet. The attached filtering cartridges are replaceable and can be changed. Currently these filters cannot be reprocessed *Sources of additional information: 3M Cleaning and Disinfecting Technical Bulletin,*[8] *3M Replacement and Cleaning Training Video,*[9] *Standard Operating Procedure for Disinfection,*[10] *Health Canada List of Disinfectants for use against SARS-CoV-2*[11]*, Lawrence et al., 2017.*[12]
Isolation gowns	• Switch to reusable isolation gown options, wherever possible: o Cloth isolation gowns or surgical gowns

B. Reclaim and Use Certified PPE from Other Sources

Health Canada, the regulator for medical devices in Canada, accepts the U.S. National Institute for Occupational Safety and Health (NIOSH) certification as an appropriate quality standard for N95 masks used by health care workers. They achieve a minimum filtration efficiency of 95% when worn properly. Health Canada states that equivalent alternate standards are also acceptable.[19] Here is the list of certified equipment according to the CDC.

Table 2 describes the other sources for PPE items that meet NIOSH standards.

Table 2. Other sources for certified PPE

Recommendation	Description
Reclaim PPE from other medical settings	• We recommend reclaiming medical-grade N95 respirators (disposable and reusable) and other PPE through solicited donations or buyback from other medical settings where they are not currently needed. For example, veterinarians, dentistry, universities, dermatology, ophthalmology, and so on. *Source of additional information: Health Canada is calling for all suppliers to help Canada combat COVID-19.*
Use PPE from commercial, non-medical settings ○ This includes disposable and reusable N95 respirators, PAPRs, disposable surgical/procedure masks, eye protection, gowns, and gloves.	• In circumstances in which traditional N95 respirators and other PPE made for health care settings are not available, we recommend health care workers use commercial-grade non-medical N95 respirators and other PPE • Other PPE is marketed to the public for general, non-medical purposes, such as for use in construction and other industrial applications[20] • We recommend the procurement of commercial-grade N95 masks (disposable and reusable) and other PPE from non-medical settings where it is not currently needed (e.g., mining, construction, manufacturing, laboratories, farming, food safety, chemical, aircraft, and other industry-related settings where non-medical N95 or equivalent respirators are commonly used) • The nine types of certified particulate respirators that can be used by health care workers include: N95, N99, N100, R95, R99, R100, P95, P99, P100. Respirators are rated "N" if they are not resistant to oil, "R" if they are somewhat resistant to oil, and "P" if they are oil-proof.[21,22] Therefore, all of these NIOSH certifications[22] will protect health care workers • Commercial-grade N95 respirators are not intended to provide liquid-barrier protection and are not tested for fluid resistance; however, fluid resistance is not needed for protection from respiratory droplets during the COVID-19 pandemic

2. Recommendations for the Extended Use of Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the extended use and limited reuse of PPE should be considered in your contingency plans.

Recommendations for health care organizations
- Extend the use of existing PPE: Ensure that health care workers caring for cohorted patients with suspected or confirmed COVID-19 are following extended-use recommendations as appropriate for their setting

Table 4 (below) describes the strategy for extended use of PPE.

Extended use is applicable to N95 respirators (disposable), surgical/procedure masks (disposable), isolation gowns (disposable and cloth), and eye protection (disposable and reusable goggles and face shields).

Table 4. PPE conservation strategy of extended use.

Strategy	Description
Extended use Applicable to the following types of PPE: • N95 respirators (disposable) • Surgical/procedure masks (disposable) • Isolation gowns (disposable and cloth) • Eye protection (disposable and reusable)	• We recommend that PPE is used over an extended period of time and over the course of many patients, in settings where it is feasible (e.g., while caring for a cohort of patients with suspected or confirmed COVID-19 in an inpatient setting). • Consider the following key principles: o Extend the use of PPE for as long as possible, but once wet, damaged, soiled, or removed (e.g., to eat or drink), or you exit the patient care area, the piece of equipment should be discarded in the appropriate receptacle. o N95 respirators (disposable) that are not wet, damaged, or soiled should be immediately disposed of in a designated biohazard receptacle for possible reprocessing, where available and appropriate o Cohort patients with suspected or confirmed COVID-19, assign designated teams of health care providers, and batch your patient encounters to help conserve the use of PPE o Take extra care when removing the PPE as this is when self-contamination may occur o Gloves should be changed between every patient encounter o Adhere stringently to hand hygiene before and after handling PPE and between patient encounters. It is safe to wear your PPE for

3. Recommendations for the Use of Expired Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the use of PPE that is expired/beyond the manufacturer-designated shelf life should be considered in your crisis plans.

Recommendations for health care organizations

- Take stock and inspect any expired N95 respirators (disposable)[6] and any other stock of expired PPE
    - Expired N95 respirators (disposable) and other PPE that have been stored in accordance with manufacturers' storage conditions require inspection to ensure they are not damaged and may be used when regular supplies are depleted

Table 5 describes the use of expired N95 respirators (disposable) and other types of expired PPE that may be used beyond the manufacturer-designated shelf life.

Table 5. Recommendations on expired PPE

Type of PPE	Description
N95 respirators[6,26-28]	• When supplies of N95 respirators are low or depleted, we recommend using expired N95 respirators from existing stockpiles • Inspect these N95 respirators to ensure they are not damaged and have been stored in accordance with manufacturers' storage conditions. Inspection should occur before distributing expired stock • Disclose to health care worker(s) that the N95 respirator(s) are expired and have been inspected before distribution • Before wearing an expired N95 respirator, a health care worker should: o Inspect for visible damage or soiling o Check that the straps, nose bridge, and nose foam are intact, and that the straps remain elastic o Perform a user seal check each time they put on a respirator to check that it was donned correctly and that a tight seal is formed on their face • There is no specific timeframe for N95 respirators, beyond the expiry dates, at which they would no longer be considered suitable for use *Sources of additional information: 3M Technical Bulletin Respirators Beyond Their Shelf Life Considerations,[6] Health Canada,[29] Centers for Disease Control and Prevention,[30] ECRI Clinical Evidence Assessment,[31] Appendix F.*
Surgical/procedure masks, isolation gowns, gloves, eye protection	• PPE products that are expired/beyond the manufacturer-designated shelf-life are typically discarded or used only for testing and training purposes. However, in the situation where supplies are depleted, expired PPE can be considered for use, as they may still provide some protection

4. Recommendations for the Limited Reuse of Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the extended use and limited reuse of PPE should be considered in your crisis plans.

Recommendations for health care organizations

- Ensure that health care workers are following limited-reuse recommendations as appropriate for their setting

Table 6 (below) describes the strategy of limited reuse.

Limited reuse is applicable to N95 respirators (disposable), surgical/procedure masks (disposable), cloth isolation gowns, and eye protection (disposable and reusable goggles and face shields).

Table 6. Conservation strategy for limited reuse of PPE

Strategy	Description
Limited reuse Applicable to the following types of PPE: • N95 respirators (disposable) • Surgical/procedure masks (disposable) • Cloth isolation gowns • Eye protection (disposable and reusable)	• *Limited reuse* refers to the practice of using the same PPE for multiple encounters with patients, but carefully removing it ("doffing") after each encounter, storing it safely, then putting it back on ("donning") without disinfecting • Limited reuse of PPE carries a higher risk of self-contamination than with extended use.[31] The feasibility of limited reuse may depend on the health care setting. For example, it is not recommended in critical care settings or for aerosol general medical procedures (AGMP). They are better used in settings like assessment centres, etc. • Limited reuse has been recommended and widely used as an option for conserving PPE during previous respiratory pathogen outbreaks and pandemics[23] • Consider the following key principles: o The PPE is safely stored between patient encounters and put it back on again ("don") before the next encounter with a patient o Even when reuse is practiced or recommended, restrictions are in place that limit the number of times the same item is reused (therefore referred to as "limited reuse") o Extend the use of PPE for as long as possible, but once it is wet, damaged, or soiled it should be discarded in the appropriate receptacle. Surgical/procedure masks that are not wet, damaged, or soiled should be immediately disposed of in a designated biohazard receptacle for possible reprocessing, where available and appropriate.

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Appendix A: COVID-19 Response: Personal Protective Equipment (PPE) Committee

Name	**Title(s) and Institutions(s)**
Joe Cafuzzo, PhD, PEng	Executive Director, Biomedical Engineering, Healthcare Human Factors, Centre for Global eHealth Innovation, University Health Network Wolfond Chair in Digital Health Associate Professor, University of Toronto
Zain Chagla, MSc, MD, FRCPC	Co-Medical Director of Infection Control, St. Joseph's Healthcare Hamilton and Niagara Health System Associate Professor, Department of Medicine, McMaster University
Connie Clerici, RN, BScN	Executive Chair, Closing the Gap Healthcare Adjunct Lecturer, IHPME, University of Toronto
Jennifer Everson, BScN, MD, CCFP, FCFP	Vice-President, Clinical, Ontario Health (West) Associate Professor, Faculty of Medicine, Department of Family Medicine, McMaster University
Michael Gardam, MD, CM, MSc, FRCPC	Chief of Staff, Humber River Hospital Associate Professor, Department of Medicine, University of Toronto
Frank Gu, PhD	NSERC Senior Industrial Research Chair and Professor, Department of Chemical Engineering and Applied Chemistry, University of Toronto
Tarek Loubani, BSc (Hon), MD, CCFP (EM)	Consultant, Division of Emergency Medicine, London Health Sciences Centre Associate Professor, Department of Medicine, Faculty of Medicine and Dentistry, University of Western Ontario
Derek McNally, RN, MM	Executive VP Clinical Services and Chief Nursing Executive, Niagara Health Adjunct Professor, Department of Nursing, Brock University
Howard Ovens, MD, FCFP(EM)	Chief Medical Strategy Officer, Sinai Health System Professor, Department of Family and Community Medicine, University of Toronto and Sr. Fellow, IHPME Ontario Provincial Lead for Emergency Medicine
Paul Preston, MD, CCFP, CCPE, CHE	Vice President, Clinical, Ontario Health (North)
Amit Shah, MD, CCFP(EM), FCFP	Emergency Department Lead, South West Region Emergency Physician, London Health Sciences Centre/St. Thomas-Elgin General Hospital Associate Professor, Division of Emergency Medicine, Western University
Chris Simpson (Chair), BSc, MD, FRCPC, FACC, FHRS, FCCS, FCAHS	Vice-Dean (Clinical), School of Medicine, Queen's University Medical Director, Southeastern Ontario Academic Medical Organization Professor, Division of Cardiology, Queen's University Affiliate Scientist, Institute for Clinical Evaluative Sciences

Name	Title(s) and Institutions(s)
Henrietta Van hulle, RN, BN, MHSM, COHN, CRSP, CDMP	Vice-President, Client Outreach, Public Services, Health and Safety Association
Tamara Wallington, MD, FRCPC	Program Chief and Medical Director, Trillium Health Partners Academic Lead, Family Medicine Teaching Unit FMTU
Dick Zoutman, MD, FRCPC, CCPE, C.Dir	Chief of Staff, Scarborough Health Network Professor, Faculty of Medicine, University of Toronto Professor, Faculty of Health Sciences, Queen's University Infectious Disease and Medical Microbiology Specialist

OCHU CUPE Union leader Michael Hurley tweet from June 2021 publicly explaining how there is no excuse for the province to lock up 100,000 elastomeric respirators since using the stockpile would mean the elimination of infections in health care settings.

Source:
https://twitter.com/hurleyochucupe/status/1409994240785096706?s=61&t=09OgtL8UnAFkit0zMzRd0w

Nicolas Smit @PPEtoheros · Jun 29, 2021 ···

.@DonDavies @NickelBelt @JohnFraserOS @MichelleRempel union leader @HurleyOCHUCUPE will tweet you with his account & CUPE's to show you how important it is to apply public pressure on Ford/Trudeau to get elastomeric respirators to HCWs & ask for an investigation into this problem

Nicolas Smit @PPEtoheros · Jun 11, 2021

Even though Ontario HCWs represented 1/5 of positive cases, @fordnation @celliottability @DrFullertonMPP decided it was better to prevent HCWs from upgrading their PPE from surgical masks to the 100,000 elastomeric respirators they bought to replace N95s. cbc.ca/news/canada/ot...

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CBC OTTAWA NEWS
PREPARING FOR THE NEXT PANDEMIC

3 25 31

MichaelHurleyCUPE ···
@HurleyOCHUCUPE

Replying to @PPEtoheros @DonDavies and 3 others

The Cambridge study, tweeted yesterday by Dr. Fisman, is conclusive evidence of the efficacy of the elastomeric respirators. If our goal is 0% Covid workplace infections and deaths for hcw, there is no excuse for keeping 100,000 respirators locked in a provincial warehouse.

5:56 PM · Jun 29, 2021

114 Retweets **13** Quote Tweets **234** Likes

Nicolas Smit @PPEtoheros · Jul 3, 2021 ···

Replying to @HurleyOCHUCUPE @DonDavies and 3 others

.@HurleyOCHUCUPE can you please get CUPE to publicly ask for help to get journalists/politicians to apply public pressure on Ford to distribute the elastomeric respirators? Union members keep telling me they feel abandoned by CUPE for refusing to publicly speak up on this issue.

1 7 10

7

OCHU CUPE Union leader Michael Hurley publicly explaining how CUPE had repeatedly asked the NDP, Liberals and Green Party to actively speak up and engage the government to ensure the locked up elastomeric respirators would finally be distributed.

Source:
https://twitter.com/hurleyochucupe/status/1428837078603808770?s=61&t=09OgtL8UnAFkit0zMzRd0w

Nicolas Smit @PPEtoheros · Aug 20, 2021

Since @HurleyOCHUCUPE won't ask @NDP to get the government to distribute the stockpile of elastomeric respirators, the NDP is now campaigning on widespread use of elastomeric respirators but say it's only possible if they get elected despite it being possible for over a year. twitter.com/AndreaneChenie...

You're unable to view this Tweet because this account owner limits who can view their Tweets. Learn more

2 6 9

MichaelHurleyCUPE
@HurleyOCHUCUPE

Replying to @PPEtoheros and @NDP

18 months ago CUPE asked the government to distribute the elastomerics. We asked the NDP, Liberals & Greens to speak up. The NDP has spoken at our rallies on this. But if, as you suggest, the NDP is officially unaware, our union requests their active engagement.

5:51 PM · Aug 20, 2021

19 Retweets **3** Quote Tweets **31** Likes

Nicolas Smit @PPEtoheros · Aug 20, 2021
Replying to @HurleyOCHUCUPE and @NDP

TY. NDP actively engaging the government & asking them to distribute the stockpile before Delta takes the lives of more HCWs will help bring media coverage to the problems HCWs face. Workplaces knowing to use these vs cloth masks will mean less infected patients to endanger HCWs.

1 8 12

Nicolas Smit @PPEtoheros · Aug 20, 2021
Replying to @PPEtoheros @HurleyOCHUCUPE and @NDP

More benefits is that federal party leaders & health critics will have to explain their position on airborne transmission & keeping HCWs in surgical masks vs ensuring they ALL have N95s/elastomeric respirators. Crucial nationwide workplace PPE legislation could also be discussed.

6 11

Sue McIntyre @sue_rpnsafework · Aug 26, 2021
Replying to @HurleyOCHUCUPE @PPEtoheros and @NDP

Yes u did!

1 1

Nicolas Smit @PPEtoheros · Aug 26, 2021
Replying to @sue_rpnsafework @HurleyOCHUCUPE and @NDP

Had the NDP spoke up last summer, HCWs could've had enough elastomeric respirators since before wave 2 to prevent all 25,000 infections among HCWs in Ontario since that time & people like Edward wouldn't have needed a double lung transplant due to a preventable workplace illness.

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8

July 3, 2022 New York Times investigation on elastomeric respirators based on resources collected by Nicolas Smit and which Nicolas is quoted in as well. It explains how despite offering better protection than N95s, the failure to promote the CDC recommendations to use elastomeric respirators as N95 alternatives along with the decision to abandon the CDC pandemic plan to put them into widespread use lead to 1000s of preventable deaths among health care workers.

Source: https://www.nytimes.com/2022/07/03/health/covid-ppe-masks-health-care.html

A Clunky Mask May Be the Answer to Airborne Disease and N95 Waste

Experts say the U.S. government has unintentionally encouraged a dependency on imported masks by failing to promote elastomeric respirators, a reusable mask that is domestically produced.

Published July 3, 2022Updated July 7, 2022

Three years into the pandemic, elastomeric respirators — industrial-grade face masks familiar to car painters and construction workers — remain a rarity at U.S. health care facilities.Kirsten Luce for The New York Times

In the early 1990s, long before P.P.E., N95 and asymptomatic transmission became household terms, federal health officials issued guidelines for how medical workers should protect themselves from tuberculosis during a resurgence of the highly infectious respiratory disease.

Their recommendation, elastomeric respirators, an industrial-grade face mask familiar to car painters and construction workers, would in the decades that followed become the gold standard for infection-control specialists focused on the dangers of airborne pathogens.

The Centers for Disease Control and Prevention promoted them during the SARS outbreak of 2003 and the swine flu pandemic of 2009. A few studies since then have suggested that reusable elastomeric respirators should be essential gear for frontline medical workers during a respiratory pandemic, which experts predicted would quickly deplete supplies of N95s, the disposable filtration masks largely made in China.

But when the coronavirus swept the globe and China cut off exports of N95s, elastomeric respirators were nowhere to be found in a vast majority of hospitals and health clinics in the United States. Although impossible to know for sure, some experts believe the dire mask shortage early on contributed to the wave of infections that killed more than 3,600 health workers.

Story continues below advertisement

The pandemic has generated a bevy of painful lessons about the importance of preparing for public health emergencies. From the Trump administration's tepid early response to the C.D.C.'s bungled coronavirus testing rollout and its mixed messaging on masking, quarantining and the reopening of schools, the federal government has been roundly criticized for mishandling a health crisis that has left one million Americans dead and dented public faith in a once-hallowed institution.

Three years into the pandemic, elastomeric respirators remain a rarity at American health care facilities. The C.D.C. has done little to promote the masks, and all but a handful of the dozen or so domestic companies that rushed to manufacture them over the past two years have stopped making the masks or have folded because demand never took off.

Most cost between $15 and $40 each, and the filters, which should be replaced at least once a year, run about $5 each. Made of soft silicone, the masks are comfortable to wear, according to health care worker surveys, and they have a shelf life of a decade or more.

"It's frustrating and frightening because a mask like this can make the difference between life and death, but no one knows about them," said Claudio Dente, whose company, Dentec Safety, recently stopped making elastomeric respirators that were specifically redesigned at the request of federal regulators for health care workers.

The government's tentative approach to elastomeric respirators during the pandemic has largely escaped public scrutiny, even as American mask producers, health policy experts and nursing unions have been pressing federal officials to promote them more aggressively. The masks, they note, are an environmentally sustainable and cost-effective alternative to N95s. Worn properly, they offer better protection than N95s, which, as their name suggests, only filter out 95 percent of pathogens. Most elastomerics exceed 99 percent.

Story continues below advertisement

The masks have another notable attribute: Most are made in the United States.

Surgical masks are manufactured at a factory in central China. N95s are largely produced there, which has caused problems for mask supplies in the United States.Chinatopix, via Associated Press

Now that hospitals have resumed buying cheap, Chinese-made face coverings and the resurgent American mask industry has imploded, experts warn of the perils of the nation's continued dependency on foreign-made protective equipment. Many of the U.S. companies calling it quits are start-ups whose founders jumped into the P.P.E. business out of a sense of civic duty.

"It's sad to see all of this manufacturing capacity come online during a crisis, only to be shut down because hospitals and even our own government would rather save a few pennies buying from China," said Lloyd Armbrust, president of the American Mask Manufacturers Association. Its membership includes just eight companies that are still producing masks, down from 51 a year ago. He said 17 of the companies have shut down.

Some experts say the C.D.C.'s hands-off approach to elastomeric respirators is unintentionally encouraging a return to the nation's reliance on disposable masks made overseas. Dr. Eric Feigl-Ding, an epidemiologist who heads the Covid-19 task force at the World Health Network, criticized federal officials for inaction despite compelling evidence that elastomerics provide the highest level of protection against aerosolized viruses. "At a certain point, you need to act on the existing science, and the failure to do otherwise is a dereliction of duty," he said.

To be clear, federal health experts back the use of elastomerics but say they are awaiting additional study results before offering full-throated support for their widespread adoption by medical personnel. Emily Haas, a scientist at the C.D.C.'s National Institute for Occupational Safety and Health, or NIOSH, said researchers were still grappling with the need to regularly disinfect them and complaints about muffled communication, though some newer models make it easier for wearers to be heard.

The bigger challenge, she says, is convincing hospitals and group purchasing organizations to embrace the masks given the abundance of N95s, which offer comparable protection during routine medical care and can be thrown away after each use.

"There's been so much research in the last 10 years that has really supported elastomerics, so in some ways the issue right now is cultural," Dr. Haas said. "No one likes change, and introducing a whole new system of respiratory protection can be a heavy lift."

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Experts say such obstacles could be overcome through more muscular federal leadership. Dr. Tom Frieden, who led an unsuccessful effort to fill the Strategic National Stockpile with elastomerics when he was C.D.C. director in 2009, said the advantages of providing them to frontline medical workers were clear, especially given the nation's ruinous overreliance on single-use masks. He said health authorities could promote elastomerics by highlighting their cost savings for hospitals and the environmental benefits of a reusable mask to help reduce the tsunami of N95s that end up in landfills. "To me, it's a puzzle why they haven't become more widespread," Dr. Frieden said.

Providing an elastomeric respirator to each of the nation's 18 million health care workers would cost roughly $275 million, according to Nicolas Smit, an expert on elastomerics and executive director of the American Mask Manufacturers Association. By comparison, he noted that the federal government spent $413 million on a disastrous effort to decontaminate N95 masks so they could be safely reused.

N95s have posed environmental concerns since they have a limited number of uses and end up in landfills.Cooper Neill for The New York Times

James C. Chang, an industrial hygienist, has long been a fan of elastomerics. In 2018, he helped to produce a report on them for the National Academies of Sciences, Engineering and Medicine, and after the short-lived swine flu pandemic of 2009, he persuaded his employer, the University of Maryland Medical Center, to purchase 1,500 masks. The decision was based in part on research that predicted a respiratory pandemic lasting more than a few weeks would lead to catastrophic supply-chain shortages.

"When you ran the numbers, it was pretty clear we'd burn through a six- or seven-digit cache of disposables pretty quickly," he said. "It's just not feasible for any hospital to stock that many masks."

Initially he had a handful of concerns — that their "Darth Vader" look would frighten patients or that disinfecting them would be burdensome. But those fears quickly faded in early 2020 as hospitals across the country scrambled to find N95s, and the C.D.C. issued guidelines saying N95s could be reused up to five times — guidance that evoked widespread skepticism among health professionals.

To deal with the need to disinfect the masks, he set up a system that allowed workers to drop them off after each shift so they could be cleaned before being made available to others.

Story continues below advertisement

"It was a real success story on our end because our staff had respirators to wear and they felt more reassured wearing elastomerics than wearing N95s," Mr. Chang said.

One of the only other hospital systems in the country to adopt the masks on a large scale was Allegheny Health Network of Western Pennsylvania, which early in the pandemic distributed more than 8,000 respirators at its 14 hospitals. The decision to do so stemmed from a coincidence of geography: Allegheny's headquarters in Pittsburgh was not far from the manufacturing plant of MSA Safety, a century-old company that got its start producing coal miner protective gear with help from Thomas Edison.

Prompted by an appeal from hospital administrators, MSA began sending over the industrial-grade masks but they quickly ran into a problem. The protruding filters only screened inhaled air, which meant that exhaled air from an infected wearer could pose a potential health risk to those nearby, according to Dr. Zane Frund, executive director for materials and chemicals research at MSA Safety.

The solution was not exactly rocket science: Product designers simply removed the masks' exhalation valve, and NIOSH in late 2020 approved the new models. A subsequent design tweak added a mechanical voice amplifier to help ease communication.

Dr. Sricharan Chalikonda, Allegheny's chief medical operations officer, said he was surprised by just how popular they became among the 2,000 medical personnel who had been outfitted to wear them — a process aimed at ensuring air would not evade the mask's tight face seal.

Health experts have said they are awaiting additional studies on elastometric masks before throwing their weight behind them.Kirsten Luce for The New York Times

According to a paper he published in the Journal of the American College of Surgeons, none of the employees went back to wearing N95s. The cost benefit of relying almost entirely on elastomerics became irrefutable: Outfitting the workers was one-tenth as expensive than supplying them with disposable N95s. A separate study found that after one year, the filters were still 99 percent effective.

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"Elastomerics for us really were a game changer," Dr. Chalikonda said. "When I think of all the millions of dollars wasted on N95s and then trying to reuse them makes you realize how much elastomerics are a missed opportunity."

Federal health officials say they are moving as fast as possible to produce stronger guidance on elastomerics. Maryann D'Alessandro, director of the National Personal Protective Technology Laboratory, said scientists were reviewing feedback from a study that distributed nearly 100,000 respirators to hospitals, nursing homes and first-responders across the country. "If we can get a tool kit together to serve as a guide for organizations and educate the users, we hope it can help move the needle," she said.

Many mask entrepreneurs are not likely to last that long. Max Bock-Aronson, the co-founder of Breathe99, which makes an elastomeric respirator that Time magazine included on its 2020 list of best inventions, has been winding down operations at the company's Minnesota plant.

He blamed the slump in sales on Covid fatigue and waning public interest in protective gear. The company's fortunes, he added, were doomed early on by the C.D.C.'s mask guidance, which prompted Amazon, Google and Facebook to limit or bar the sale of medical-grade masks to consumers, even as P.P.E. imports once again began flooding the United States.

"The whole industry has been gutted," said Mr. Bock-Aronson. "Every time there's a new variant, we get a small bump in sales, but I haven't taken a nickel out of the company since last May."

For now, he is focused on finding a buyer for his company while selling off his inventory online. The masks cost $59 and can be sheathed in washable covers that come in eight colors, among them crimson, linen and royal blue.

All sales, the website points out apologetically, are final.

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CBC investigation released June 10, 2021 where Ontario Health officials confirm how the province had kept 100,000 elastomeric respirators locked up since June of 2020 and how in addition to the 100,000 that remain locked up, there were supposed to be 22,000 in use by Ontario hospitals which unions disputed wasn't happening.

Source: https://www.cbc.ca/news/canada/ottawa/ottawa-covid-masks-protection-1.6053953

The campaign to get better masks for front-line workers is now underway

As provinces move ahead with their reopening plans, some researchers and advocates say better mask protection can play an important role in preparing for the next viral outbreak while still protecting those who are vulnerable to COVID-19 and its more contagious variants.

A person wears personal protective equipment, which includes an N95 respirator mask and nitrile gloves. The masks were quickly in short supply at the beginning of the pandemic. (CBC/Radio-Canada)

As provinces including Ontario ramp up their reopening plans, some experts say masks remain a key method of protection against COVID-19 — but caution that many people, including health-care workers, aren't able to access the right kind.

"Things like surgical masks and cloth face pieces — they are not closely fitting to the face," said Simon Smith, a retired research scientist in respiratory protective equipment and the former president of the International Society for Respiratory Protection.

"They do some good in terms of source control, but in terms of protecting the wearer, because there is no good seal to the face, particles can travel with the air that's inhaled around the edges of the mask."

Smith said a well-fitted respirator provides better protection against airborne viruses, especially in health-care settings such as hospitals, but they're rarely being used.

Part of the problem, Smith said, was the reluctance of public health officials to recognize the airborne nature of COVID-19 until last fall.

An alternative to the N95

During the pandemic, the N95 respirator, so named for its ability to filter 95 per cent of airborne particles, has become the gold standard for masks in health-care settings.

N95 respirators are compact and easy to maintain, but Smith said they can be uncomfortable after long periods of wear.

An alternative, the elastomeric respirator, typically includes replaceable cartridges and filters. Traditionally, they've been used in construction and other workplaces where there are environmental hazards. They can be cleaned, disinfected, stored and used multiple times, making them a more economical choice.

Some experts think masks like these industrial elastomeric ones could be used in other workplaces, even health care. (Holly Caruk/CBC)

Smith said during fit tests, where instruments are used to measure the concentration of particles inside the respirator compared to what's outside, masks that seal to the whole face such as the elastomeric respirator have been shown to offer better protection than other cloth or surgical masks.

"And so they are better for use in situations that may be more hazardous," Smith said.

WATCH | Why your masks may not be as protective as you think:

Why your masks may not be as protective as you think

With more contagious variants of COVID-19 on the rise, there's more talk of improving people's masks. The type of mask is important, but as The National's Andrew Chang found out, so is its fit.

Some ambulance centres and dentists have already made the move to elastomeric masks, but Smith says moving to those higher forms of respirators in health care has been a hard sell.

"It's been a bit of an uphill struggle to get this acceptance because I guess perhaps some unfamiliarity and as I say, acceptance of the threat and the necessity for that kind of equipment," Smith said.

Health Canada has approved elastomeric respirators for use, and in a statement said it expedited access to them during the pandemic. However, during the worldwide shortage of N95 masks, the federal government chose to stockpile products that were in common use.

Pushback in workplaces

There have been several reports of pushback in workplaces in getting access to respirators, especially in health care, due to directives that state they should only be used during high-risk activities that generate aerosols.

The Ontario Nurses Association is currently engaged in a court battle with the province over the issue.

"I don't actually know of anyone who's wearing an elastomeric respirator at the hospital," said Dr. Jennifer McDonald, a physician in Ottawa who's been calling for better airborne precautions in Canada. "The problem with that elastomeric is that it's very unknown to the health-care setting."

There have been many reports of pushback when workers have asked for more than a surgical mask. (Ivanoh Demers/CBC)

The Ontario government acquired 100,000 elastomeric masks in June 2020, but union representatives say they still haven't seen them in use.

In an email to CBC, the Ontario Ministry of Health said those masks were made available to long-term care homes and the ministry has so far distributed 22,000 of them.

The ministry said it "currently has close to 100K elastomeric respirators in the stockpile and intends to maintain these as part of an ongoing PPE stockpile strategy."

Elastomeric respirators "would be an excellent choice in many settings," McDonald said, if people can get past how they look.

Lobbying efforts

A coalition of occupational doctors, health specialists, engineers and other professionals has also been calling on the federal and provincial governments to step up their COVID-19 precaution efforts.

They're lobbying for widespread use of respirators over surgical masks, not just in hospitals, but other front-line spaces as well.

"There's no excuse for not giving those who need them real respirators. And this doesn't just include health-care workers. It includes anyone who is in an enclosed space with a number of people for something beyond a few minutes," said Dorothy Wigmore, an occupational hygienist in Kitchener Ontario and a member of the grassroots coalition.

These types of precautions were recommended to governments in the SARS commission.

In a statement to CBC, Health Canada said with the lessons learned from COVID-19, there will be further consideration of what should be in the stockpile mix in the National Emergency Strategic Stockpile.

Waypoint reports fourth death as staff pleads for MPP's help

'If it's not too much trouble, can you ask Doug Ford to send some PPE to Waypoint?' staffer asks Simcoe North MPP Jill Dunlop

Andrew Philips Feb 3, 2021 1:15 PM

Welcome to
Waypoint
CENTRE for MENTAL HEALTH CARE
CENTRE de SOINS de SANTÉ MENTALE
Waypoint
Advancing Understanding.
Improving Lives.
Avancer la compréhension.
Ameliorer la vie.

Waypoint Centre for Mental Health Care entrance is pictured. Andrew Philips/MidlandToday file photo.

Another patient has died due to an ongoing outbreak at Waypoint Centre for Mental Health Care as hospital staff ask the local MPP for help.

The outbreak at the Penetanguishene facility's Horizon program that's linked to a COVID-19 variant of concern now includes eight confirmed positive patient and eight positive staff cases.

"We have confirmation that one of the individuals in the current outbreak was positive for a particular mutation indicating a high probability that this individual has a variant strain of concern of COVID-19," the hospital noted in a statement.

"We do not have confirmation which variant of concern it is. All other cases are being tested for the variant of concern. We have not yet received any results but are managing the outbreak following the guidelines for the variant of concern."

Waypoint declared a COVID-19 outbreak on the Horizon program for geriatric psychiatry that's located in the Bayfield Building on Jan. 22 in consultation with the Simcoe Muskoka District Health Unit.

MidlandToday has also learned that some hospital staff have made a desperate plea to Simcoe North MPP Jill Dunlop asking for more N95 masks.

One note reads: "If it's not too much trouble, can you ask Doug Ford to send some PPE to Waypoint? Our employer says they are low on N95s, so some of those would be great since we are under outbreak and many of our awesome staff and patients are now infected. I can pick up anywhere local, just let me know where and when! Thanks Jill."

In response, Waypoint noted all staff on the Horizon program have reusable elastomeric respirators and as well as all personal protective equipment (PPE) required by public health guidelines.

"The elastomeric respirators are above and beyond public health recommendations on personal protective equipment, and as they are reusable, aid with required conservation efforts. This process was reviewed by the Ministry of Labour and we have received no orders at this time. The investigation is continuing and we are working collaboratively with all parties to ensure all precautions are in place."

As reported Tuesday, the hospital recently experienced a shortage of N95 masks on the Horizon unit. This led to a visit from the Ministry of Labour and included discussion on elastomeric respirators, which are reusable, but do require some training to use.

In an emailed response to questions relating to the apparent shortage and ministry visit, Waypoint said it is going beyond provincial and public health guidance on PPE recommendations with the provision of elastomeric respirators for Horizon staff upon request.

"PPE conservation remains a priority as the pandemic status and projections are continually changing, and with the new variants of concern and delays in the vaccine," the hospital noted in a statement Tuesday. "The hospital has limited inventory of disposable N95 masks, however the elastomeric respirators are reusable and aid with our conservation efforts."

The hospital also expressed its "deepest condolences to the families and friends affected by this loss, felt by all.

"Managing the outbreak on the Horizon program is our top priority right now and we have all the necessary precautions in place. COVID-19 represents an unprecedented challenge to our healthcare system, and as the pandemic continues we are committed to continually adapting our processes to ensure the highest level of safety."

The statement goes on to thank staff for their care and compassion during this difficult time.

"We have had a number of staff from across the hospital volunteer to work on the program and their efforts along with everyone who has been redeployed to Horizon are greatly appreciated," it noted.

"We are offering numerous wellness supports for our staff so they can continue to provide excellent care to our patients."

As well, the Horizon program is currently closed to transfers unless for emergency medical reasons until the outbreak is over. The hospital remains open for admissions to our Swing Unit (isolation unit) and all other clinical programs are continuing activities.

An earlier confirmed COVID-19 outbreak in the Penetanguishene facility's Awenda 'A' and 'B' (forensic) units is now over. According to Waypoint, the Awenda program outbreak was contained to two patients and one staff testing positive and declared over by the health unit Saturday.

Since the pandemic began last March, Waypoint has reported 15 positive patient cases (reduced by one as numbers were incorrectly reported on Feb. 1), 23 positive staff (includes an unreported positive inadvertently missed in October) cases and four deaths.

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December 10, 2020 Radio Canada investigation with union leaders and Nicolas Smit explaining how hospitals and long term care homes actively prevented staff from using elastomeric respirators due to the failure by the government to ensure the Ontario Health recommendations to use them as N95 alternatives were well known. The news article also explains how the province confirmed there was a large stockpile of unused elastomeric respirators

Source: https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

Une solution de rechange au N95 peu connue

Publié le 11 décembre 2020

Les masques respiratoires P100 sont aussi efficaces que les N95, mais ne sont toujours pas chose courante chez les travailleurs de la santé en Ontario, malgré les stocks du gouvernement ontarien.

Le masque respiratoire P100 est plutôt imposant comparé au N95.

Il recouvre tout le visage grâce à une armature en caoutchouc, et peut filtrer jusqu'à 99,97 % des particules en suspension dans l'air, plus efficace que le N95.

Ce type de masque a été approuvé pour utilisation en cas de pénurie d'autres masques par Santé Canada en mai, puis par l'Agence Santé Ontario en septembre.

Le masque P100 (sans cartouches) à gauche, le masque N95 à droite

Photo : Radio-Canada / Jean-Loup Doudard

Mais ils ne sont pas distribués à grande échelle, malgré certaines pénuries de N95 en Ontario.

«Particulièrement dans les foyers de soins de longue durée, [les employés] ont du mal à accéder à ce genre d'équipements,» dit Michael Hurley, président du Conseil des syndicats d'hôpitaux de l'Ontario.

«Lorsqu'ils en demandent, ils se font dire souvent qu'ils ne peuvent pas en avoir, qu'ils n'en ont pas besoin,» dit-il.

Le gouvernement dispose de réserves de N95, mais également de masques P100, indique Michael Hurley.

> *« Je ne comprends pas pourquoi [ils n'ont pas été distribués]. Ils seraient si viables. »*

> *— Michael Hurley, président du Conseil des syndicats d'hôpitaux de l'Ontario*

Dans un courriel envoyé à Radio-Canada, le Ministère de la Santé confirme avoir une réserve de masques élastomères comme les P100.

«Ces respirateurs requièrent un certain niveau de compétence et d'éducation afin d'être utilisés de manière sécuritaire; ils sont donc plus appropriés pour les travailleurs de la santé et non le public,» affirme une responsable des communications du ministère.

À lire aussi :

- Du N95 au P100 : comprendre l'utilité des masques contre le coronavirus
- L'Ontario disposait de 12 G$ en fonds non alloués pour la 2e vague

«Nos partenaires en santé ont été mis au courant de la disponibilité de ces respirateurs au cas où leur organisation aurait l'expertise pour les employer,» rajoute-t-elle par courriel.

Pourtant, certaines organisations ne se disent pas au courant de l'existence de ses réserves.

Le service ambulancier du district de Cochrane, dans le Nord-Est de l'Ontario, utilise toujours les masques N95.

«Nous n'avons reçu aucune direction du Ministère de la Santé. Nous suivons les recommandations du Bureau de santé Porcupine,» indique Jean Carrière, directeur et chef des services d'urgence santé pour le Conseil d'administration des services sociaux du district de Cochrane (DSAAB).

D'autres services ambulanciers au pays utilisent pourtant les masques P100 depuis plusieurs mois. C'est le cas des ambulanciers de la Coopérative des Paramédics de l'Outaouais, qui les portent depuis le mois de mai.

Nicolas Smit tente de convaincre le public de l'utilité des masques P100.

Photo : Radio-Canada / Jean-Loup Doudard

Nicolas Smit travaille depuis plusieurs années dans le secteur minier à Sudbury, où les P100 sont monnaie courante.

Ces masques respiratoires protègent ceux qui les portent, mais il est également possible d'y fixer un masque additionnel pour protéger les patients, dit-il.

«Il n'y a pas de désavantages à les utiliser, mais il y a beaucoup de désavantages à ne pas les utiliser,» dit Nicolas Smit, qui s'est donné comme mission d'informer le plus de gens possible de la viabilité des P100.

Un cri du coeur auquel fait écho l'Association des infirmières et infirmiers de l'Ontario (ONA).

> *« Non seulement ces masques offrent un niveau de protection plus élevé que les masques N95, mais ils sont réutilisables, ce qui réduit l'utilisation des masques N95. »*
>
> *— Association des infirmières et infirmiers de l'Ontario, par courriel*

L'ONA note toutefois que les N95 sont aussi nécessaires, et exhorte le gouvernement à les rendre plus facilement accessibles aux infirmières et infirmiers de la province.

April 22, 2020 news article by Sudbury.com where NDP MPP Health Critic France Gelinas and NDP MP Carol Hughes are interviewed for their help getting Nicolas Smit's idea to get both levels of government to look into using elastomeric respirators as N95 alternatives looked at by the government. Ms. Gelinas confirms the government had already proved that elastomeric respirator would guarantee protection for the wearer. She explains that while surgical masks couldn't protect those wearing them from infection, that is what the province would use anyways instead of elastomeric respirators since the worry was not preventing workers from becoming infected but instead prevented workers from infecting others.

Source: https://www.sudbury.com/local-business/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

Sudbury engineer urging mining industry to donate respirators

Nicolas Smit is championing a grassroots effort to help front-line health workers

Apr 22, 2020 2:00 PM

WARNING
N95

Face masks with an N95 rating (pictured) have been in standard use during the COVID-19 pandemic. (Stock photo)

As the province scrambles to find enough N95 masks to protect front-line workers against COVID-19, one Sudbury engineer believes the mining industry could have a greater role to play in helping to meet that need.

Since mid-March, Nicolas Smit has been on a one-man mission to raise awareness about the available alternatives to the N95 masks.

Although N95s have become standard equipment for health-care workers, Smit argues there are plenty of other equally, if not more, effective options that should also be considered for use.

"My main goal is just to raise awareness so that the hospitals around the world can know to ask for these," said Smit, a trained mine engineer technologist, who currently works as a warehouse associate for Toromont Cat.

All protective face masks come with a rating comprised of a letter and a number. The 'N' in N95 indicates the mask is 'not oil resistant,' while the 95 refers to the percentage of particulates, measuring 0.3 microns or larger, that the mask can filter out.

The N95 offers great protection, which is why it's widely used in the health-care field.

They're also easily found at hardware stores and popular amongst do-it-yourselfers tackling home reno projects.

But Smit believes the P100 respirator mask, in particular, is a great secondary option, because it's oil-proof and can block 99.97 per cent of airborne particulates.

Here's where the mining industry comes in.

At many mine operations, Smit said, P100 masks are not only plentiful, but mandatory.

From his personal experience working in Sudbury, for example, he said he was instructed that any worker on a mine site must have a minimum P100 mask on their person in the event of an emergency.

"If there's a release of gas, they sound the alarm and when the alarm sounds, that's the first thing you do is put it on," said Smit, a former executive officer with the Sudbury chapter of the Canadian Institute of Mining, Metallurgical and Petroleum (CIM).

With operations at so many mines across Northern Ontario having curbed or temporarily ceased operations amid the pandemic, Smit believes this is an ideal opportunity for the industry to step up and help.

Donating masks to area hospitals or health clinics could help protect front-line workers who may not even be aware that these masks are available, he said.

"The PPE is just sitting there not being used."

He even suggests that a government tax break on donations could be one way to create more of an incentive for companies to donate.

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Smit brought his suggestion to Carol Hughes, MP for Algoma-Manitoulin-Kapuskasing, and France Gélinas, MPP for Nickel Belt, who have moved the idea up the chain of their respective governments.

Gélinas sits in on a thrice-weekly conference call with the province's COVID-19 Command Table, including Ontario's chief medical officer of health, Dr. David Williams, where options for PPE have been discussed at length.

Though the P100s were brought up as an option, they've yet to be approved for use by Health Canada, Gélinas said.

"(The province is) very happy with what's coming in," she said. "But for the mask in a hospital setting, they are pretty much sticking with the surgical mask to protect others and the N95 to protect others and the wearer, and so far that's all that I have seen."

Both parliamentarians noted that, while the P100 masks offer protection, they do pose some concerns for a health-care setting.

While the mask helps filter the air being breathed in, there's no certainty it filters the air breathed out. So, protection is only guaranteed for the wearer of the mask.

Also, the mask can impede communication between workers, or between a worker and their patient.

Hughes said she's aware of some Northern Ontario hospitals receiving donated P100s, but is unaware if they've been used.

Still, she applauded Smit's initiative, suggesting that, in a crisis situation, any and all suggestions are welcome.

She advised people go through the federal government's procurement process set up to address COVID-19 needs as the most expeditious way to get a suggestion through to Health Canada.

"Then it would have to go through that process of being evaluated, assessed, or tested, and then decide from there," Hughes said.

Smit acknowledges the P100s aren't a perfect solution.

But at some hospitals, where PPE is scarce and health-care workers are at increased risk of being infected, he believes a P100 mask could be better than nothing.

Smit is challenging the mining industry to donate where they can, and encourages other industries with masks on hand to take heed as well.

"They're used in construction, manufacturing, agriculture, pharmaceuticals," Smit said. "So we could easily help all the hospitals get all the respiratory protection they need."

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November 25, 2020 Sudbury Star news article with NDP MP Carol Hughes spreading misinformation that elastomeric respirators are too dangerous to use because they have an exhalation valve. The article confirms that Ontario Health PPE guidelines explains how to cover the valve to remove the assumed danger.

Source: https://www.thesudburystar.com/news/local-news/sudbury-engineer-raising-awareness-about-n95-mask-alternative

Sudbury engineer raising awareness about N95 mask alternative

Ontario Health said P100 respirators can be used when the disposable N95 mask supply is low

Published Nov 25, 2020 · Last updated Nov 27, 2020 · 4 minute read

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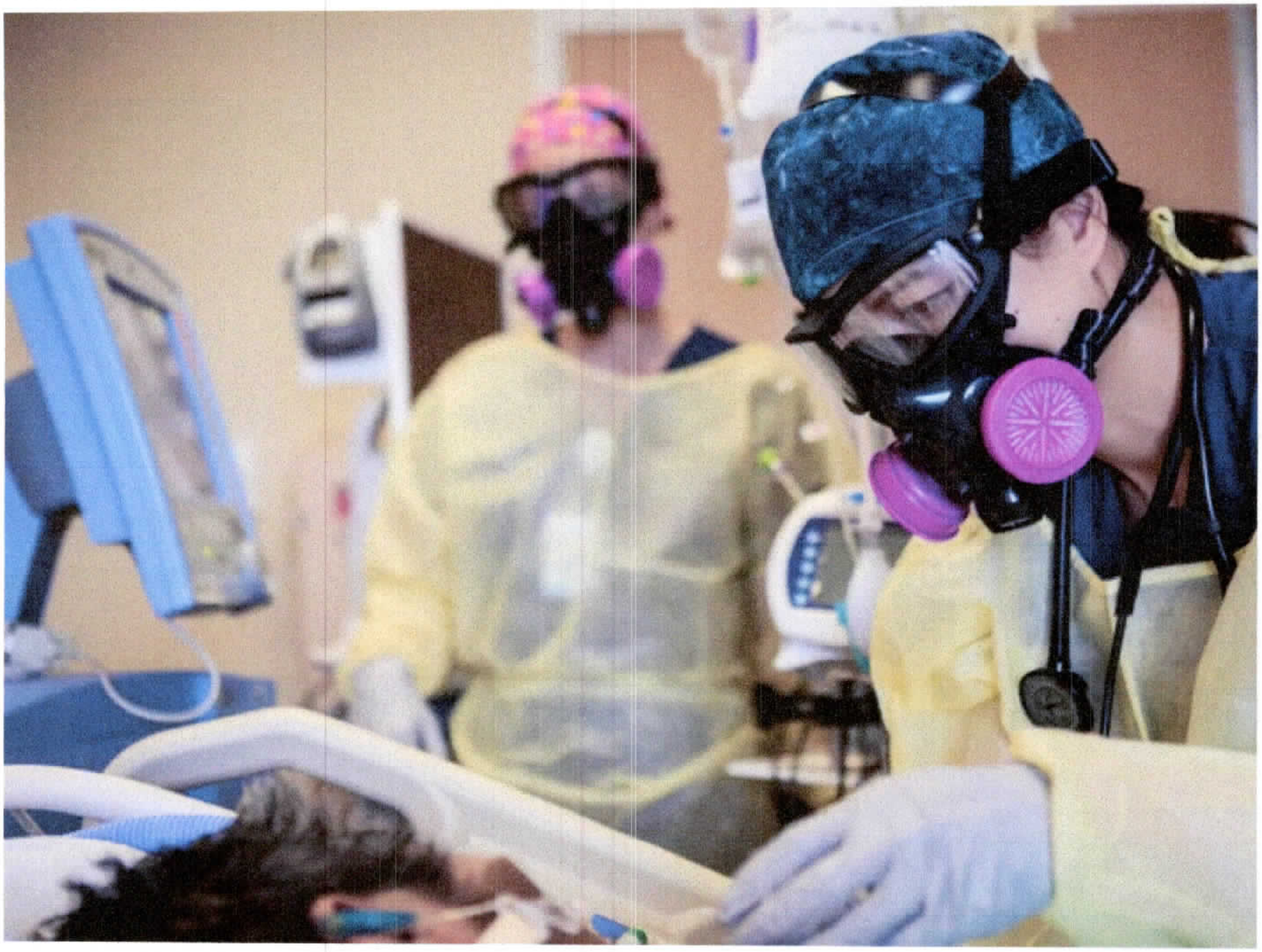


Health-care workers using elastomeric respirators. MSA Safety, the manufacturer that was used for the American College of Surgeons study in May, has released a YouTube video with those health care workers talking about their experience, how the respirators work and how much of a difference these respirators have already made. Supplied

A Sudbury engineer is on a mission to raise awareness about the efficacy of elastomeric respirators with the hope that local industries will be able to help in the fight against COVID-19.

Story continues below

Nicolas Smit has been spearheading a campaign that aims to get elastomeric respirators, otherwise known as P100 masks, into the hands of Ontario health-care workers since the beginning of the pandemic this spring.

"There's a severe PPE shortage of N95 masks, which is resulting in health-care workers having to reuse them for days to weeks at a time. There is no need to do that because Ontario has updated their PPE guidelines and they have a stockpile of elastomeric respirators," he said.

"After updating their guidelines, however, the government overlooked letting the public know. These respirators are now considered safe."

Ontario Health was initially reluctant to approve elastomeric respirators for use in a health-care setting due to the disadvantages and risks associated with their design.

Story continues below

However, the agency has recently changed its tune and approved reusable elastomeric respirators for use amid PPE shortages.

Smit is now working to inform the public about the changes to Ontario Health's guidelines, and to encourage local industry to start donating P100 masks to frontline workers once again.

"Originally, elastomeric respirators were considered unsafe because when the government looked into them in late March, they only looked at one type of elastomeric respirator and it had a one-way valve," he explained.

"While they determined that the mask would protect the health-care worker, they were afraid that the one-way valve would let unfiltered air out, so a patient could potentially become infected if the health-care worker was infected. Because of that, they thought it would be too dangerous."

Story continues below

Carol Hughes, MP for Algoma-Manitoulin-Kapuskasing, had written to the Minister of Health in April to ask about P100 masks and whether they were appropriate for use in a health-care setting.

She said that it is up to Health Canada to approve the use of these respirators, and the government makes changes to their guidelines according to what the experts say.

"This is a product that was approved as safe to use in different industries," she said, meaning that these masks are considered ideal for use in construction environments.

Elastomeric respirators are meant to protect the wearer from exposure to dust, fumes, and hazardous mists and particulates like lead and arsenic.

They are up to 99.97 per cent effective against oil-based particulates when worn properly.

Story continues below

They are commonly used in industrial settings like, for example, in the local mining industry. Smit used to use P100s regularly when he previously worked at a Vale smelter.

"In a health-care setting, it might offer better protection for the wearer, we're just not sure if it offers better protection for the patient. As politicians, we leave these decisions up to the experts. They need to test the PPE to make sure it's safe," said Hughes.

Smit said that there are ways to maintain source control to address exhalation valve concerns, including placing a surgical, procedural or cloth mask over the valve to create a sterile environment, something that Ontario Health echoed in its new guidelines.

The National Institute for Occupational Safety and Health (NIOSH) in the United States has also recently approved the first elastomeric respirator without an exhalation valve.

Story continues below

"In an effort to optimize the long-term sustainability of PPE supply, shifting from disposable PPE to reusable PPE should be considered in contingency plans to ensure the health and safety of workers and patients," said an Ontario Health representative.

"The stockpile of PPE that we have is in constant flux as we are constantly receiving and distributing product."

Ontario released a set of guidelines called "Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic" on Sept. 22 that addresses the use of reusable elastomeric respirators.

The document states health-care workers can consider the use of NIOSH-approved reusable elastomeric respirators when disposable N95 respirator supply is low or during a period when N95 respirators are being conserved.

Story continues below

"If fit-tested and properly cleaned and disinfected between uses, reusable elastomeric respirators (half-mask or full facepiece) are as effective as disposable N95 respirators," said Ontario Health.

"Reusable elastomeric respirators differ from disposable N95 respirators in that some users may experience issues with comfort/bulkiness, and interference with communication, and some people may feel claustrophobia or anxiety."

The use of this kind of respirator in a health-care setting also requires support from local administrative and occupational health and safety teams to ensure fit-testing and standardized cleaning protocols.

If an employee presents with their own respirator, occupational health and safety units need to be engaged to support safe usage.

Story continues below

Now that the guidelines have changed, and more agencies are encouraging the use of elastomeric respirators in the event of an N95 shortage, Smit wants to see local PPE donations start up again.

"People that were donating them in the past, such as the mining industry, were not able to donate anymore because the government said in April that these respirators were too dangerous to use, so donations stopped," he said.

"I hope that now the guidelines have been changed, more people will become aware that elastomeric respirators are a safe option, and that donations will be able to resume."

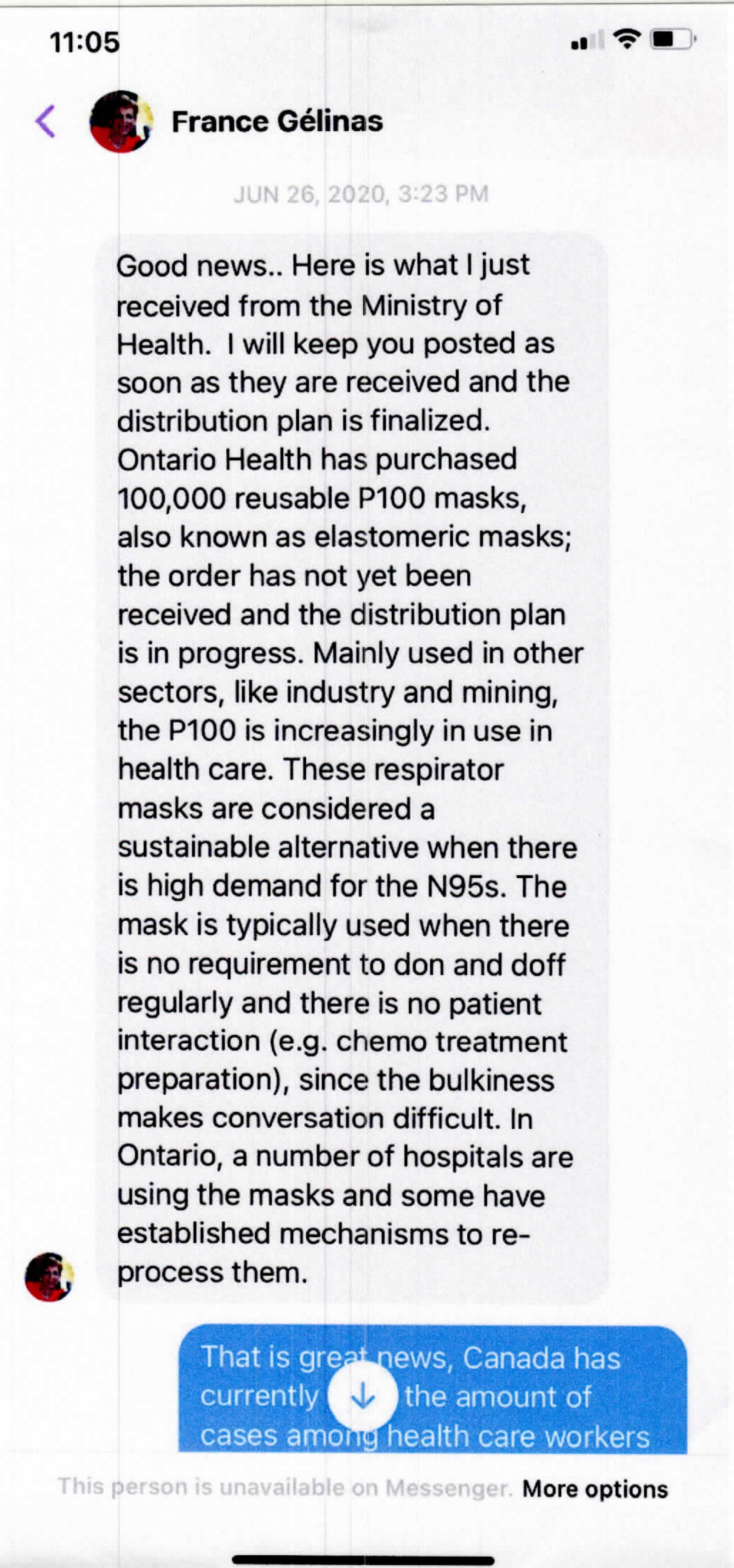
The Local Journalism Initiative is made possible through funding from the federal government.

sud.editorial@sunmedia.ca

Twitter: @SudburyStar

13

June 28, 2020 Facebook Messanger private message from NDP MPP France Gelinas to Nicolas Smit letting him know that Ontario Health had just let her know that the government purchased 100,000 elastomeric respirators with plans to distribute them to help solve the N95 shortage.
Source: Facebook Messenger private message



France Gélinas

JUN 26, 2020, 3:23 PM

Good news.. Here is what I just received from the Ministry of Health. I will keep you posted as soon as they are received and the distribution plan is finalized. Ontario Health has purchased 100,000 reusable P100 masks, also known as elastomeric masks; the order has not yet been received and the distribution plan is in progress. Mainly used in other sectors, like industry and mining, the P100 is increasingly in use in health care. These respirator masks are considered a sustainable alternative when there is high demand for the N95s. The mask is typically used when there is no requirement to don and doff regularly and there is no patient interaction (e.g. chemo treatment preparation), since the bulkiness makes conversation difficult. In Ontario, a number of hospitals are using the masks and some have established mechanisms to re-process them.

That is great news, Canada has currently the amount of cases among health care workers

This person is unavailable on Messenger. **More options**

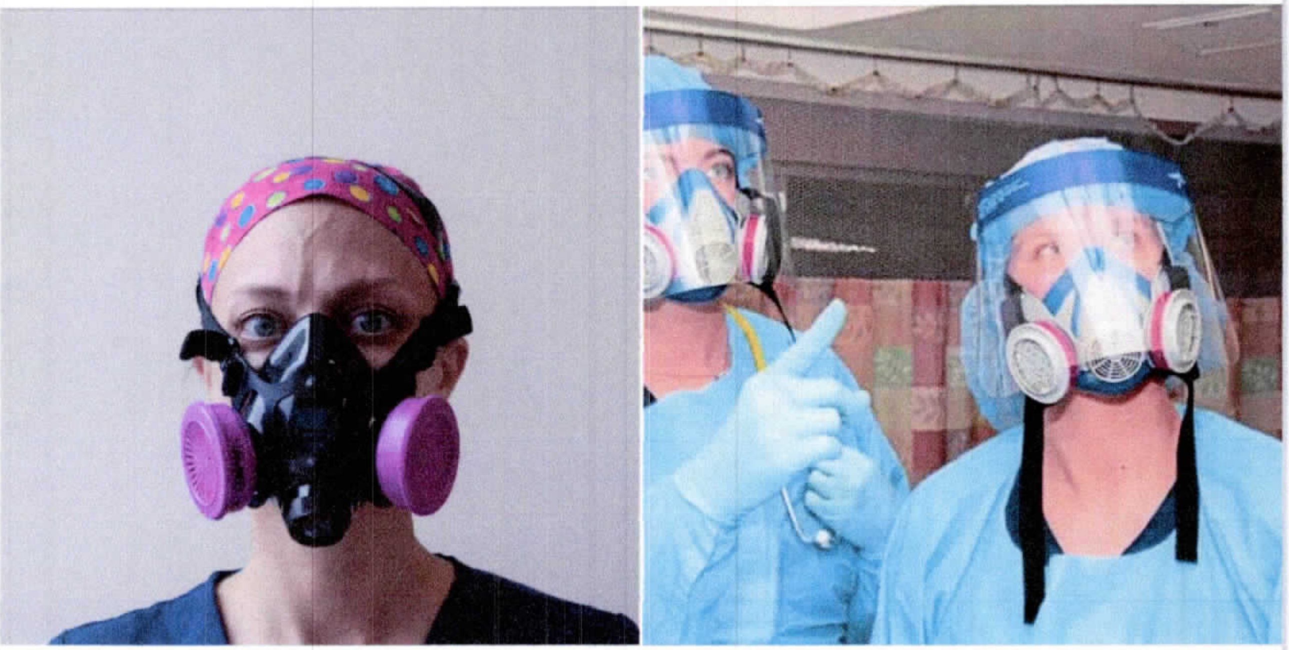
14

July 20, 2020 Facebook post by NDP MPP France Gelinas letting her Facebook followers know the government had bought 100,000 elastomeric respirators to help protect healthcare workers.

Source:
https://www.facebook.com/france.gelinas.92/posts/10158491700048349

France Gélinas
July 20, 2020 ·

To my health care friends.
The Ontario government has purchased 100,000 P100 respirators. Have you ever used a P100 respirator? Did you like it? Would you recommend them? Si vous avez déjà utilisé un masque P100 j'aimerais savoir ce que vous en pensez.



48 117 comments 48 shares

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Jerry Desormeaux
Shouldn't everyone be wearing these...
If this so called virus is really really bad?
Like 2y 5

↳ Nicolas Smit replied · 8 Replies

Deborah Fletcher Taylor
New world order
Like 2y 4

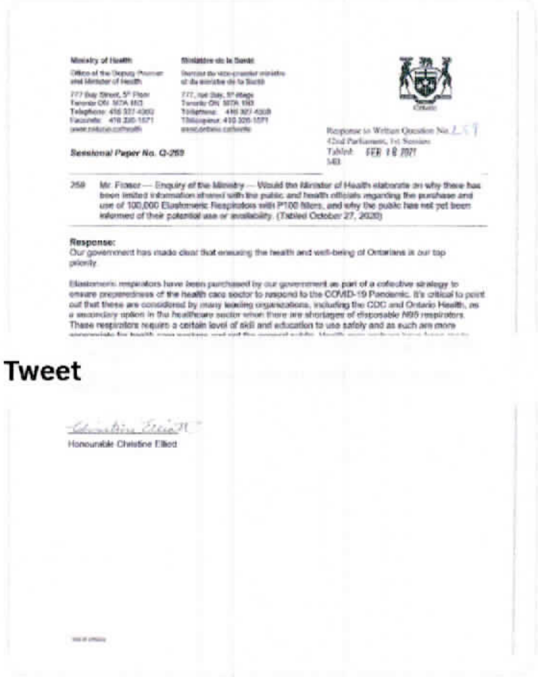
February 22, 2021 tweet by Liberal MP Ryan Turnbull on how the negligence by the Ontario government to keep 100,000 elastomeric respirators locked up was hard to ignore and he questions how many lives could've been saved had the PPE not purposely been withheld from frontline workers.

Source: https://twitter.com/TurnbullWhitby/status/1364064116810387457

DidYouVote? @proudNerdVoter · Feb 22, 2021
@JohnFraserOS @ontarionurses @DFisman @StevenDelDuca

Ford govt bought 100k elastomeric respirators that could have been given to frontline staff?

How many hospital workers could have not been infected had they had these? #ppe #COVID—19



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Facsimile: 416 326-1571
www.ontario.ca/health

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Télécopieur: 416 326-1571
www.ontario.ca/sante

Response to Written Question No. 259
42nd Parliament, 1st Session
Tabled: FEB 18 2021

Sessional Paper No. Q-259

259 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health elaborate on why there has been limited information shared with the public and health officials regarding the purchase and use of 100,000 Elastomeric Respirators with P100 filters, and why the public has not yet been informed of their potential use or availability. (Tabled October 27, 2020)

Response:
Our government has made clear that ensuring the health and well-being of Ontarians is our top priority.

Elastomeric respirators have been purchased by our government as part of a collective strategy to ensure preparedness of the health care sector to respond to the COVID-19 Pandemic. It's critical to point out that these are considered by many leading organizations, including the CDC and Ontario Health, as a secondary option in the healthcare sector when there are shortages of disposable N95 respirators. These respirators require a certain level of skill and education to use safely and as such are more

Christine Elliott
Honourable Christine Elliott

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Nicolas Smit @PPEtoheros · Feb 22, 2021
@TurnbullWhitby it took 4 months for the Minister of Health to provide a non answer about why the Ontario government won't distribute the 100,000 elastomeric respirators or inform the public about their recommendations to use them. @sri_srikrishna

2 15 25

Relevant peop

Ryan Turnb
@TurnbullW
Member of P
Father, husb
and former (
Ryan.Turı
he/him/il

Ryan Turnbull 🇨🇦
@TurnbullWhitby

Replying to @proudNerdVoter @JohnFraserOS and 3 others

Hard to ignore this level of incompetence. So Ontario's Min. of Health did not use the 100k Elastomeric Respirators in healthcare settings to protect workers and prevent the spread of COVID-19? How many lives could have been saved in LTC? @Docs4LTCJustice @voicesofltc #onpoli

11:06 PM · Feb 22, 2021

27 Retweets 3 Quote Tweets 64 Likes

What's happer

NBA · Starts at 8:00 PM
Bulls at Grizzlies

Trending in Canada
Puljujarvi

Trending in Canada
Duplessis

Trending in Canada

February 22, 2021 subsequent tweet by Liberal MP Ryan Turnbull on how appalled he was that the Ontario government took billions in federal assistance to help buy PPE for hospitals and long term care homes but did nothing to prepare for the second wave and then watched people die in long term care while pretending the government had everything under control but delayed requested for help and instead focused on protecting long term care homes from being sued for the negligence that occurred that lead to the preventable deaths. Ryan also shared the letter Ontario Liberal Health Critic John Fraser received from Ontario Minister of Health indicating how the public couldn't be told about the importance of elastomeric respirators or the recommendations to use them as N95 alternatives since the public wasn't properly educated.

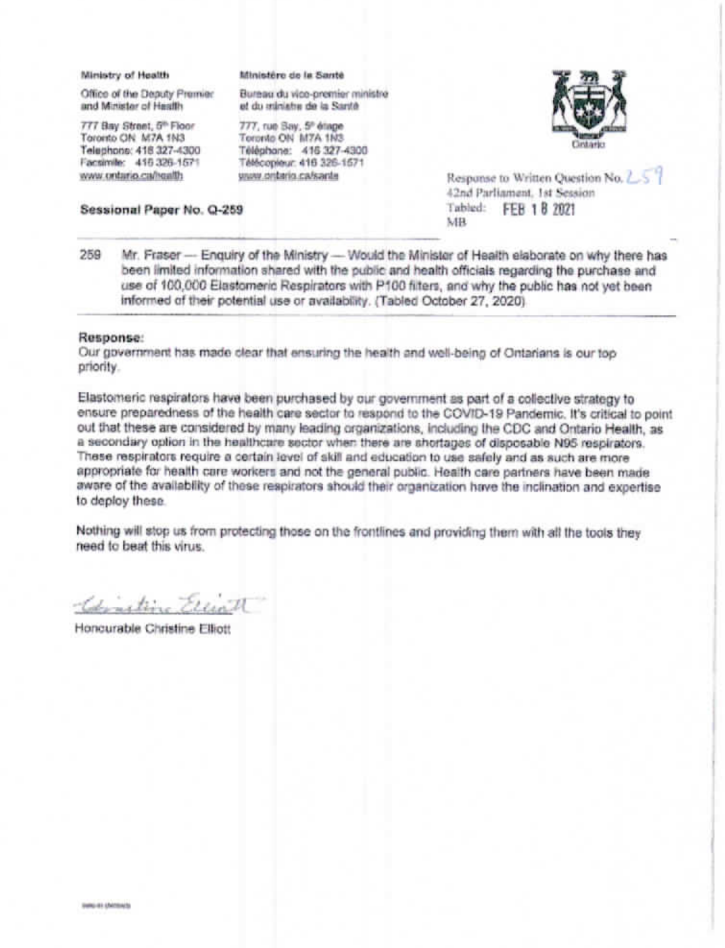
Source: https://twitter.com/TurnbullWhitby/status/1364068590677331969

Ryan Turnbull 🇨🇦 🇺🇦
@TurnbullWhitby

This is just appalling! Just like our Prov. Govt sat on Billions given to them by the Fed Govt and did nothing to prepare for the 2nd wave. Then watched people die in LTC, told us they had it under control, delayed requesting help and then protected the homes from being sued.

Nicolas Smit @PPEtoheros · Feb 22, 2021

@TurnbullWhitby it took 4 months for the Minister of Health to provide a non answer about why the Ontario government won't distribute the 100,000 elastomeric respirators or inform the public about their recommendations to use them. @sri_srikrishna @Christinekorda @votingnurse



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and Minister of Health

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Ontario

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42nd Parliament, 1st Session
Tabled: FEB 18 2021
MB

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Response:
Our government has made clear that ensuring the health and well-being of Ontarians is our top priority.

Elastomeric respirators have been purchased by our government as part of a collective strategy to ensure preparedness of the health care sector to respond to the COVID-19 Pandemic. It's critical to point out that these are considered by many leading organizations, including the CDC and Ontario Health, as a secondary option in the healthcare sector when there are shortages of disposable N95 respirators. These respirators require a certain level of skill and education to use safely and as such are more appropriate for health care workers and not the general public. Health care partners have been made aware of the availability of these respirators should their organization have the inclination and expertise to deploy these.

Nothing will stop us from protecting those on the frontlines and providing them with all the tools they need to beat this virus.

Christine Elliott
Honourable Christine Elliott

11:24 PM · Feb 22, 2021

49 Retweets **6** Quote Tweets **87** Likes

DidYouVote? @proudNerdVoter · Feb 22, 2021

17

February 13, 2021 tweet by Liberal MP Ryan Turnbull about the province of Ontario having a stockpile of elastomeric respirators that could prevent 99% of infections. Ryan asks why the federal government doesn't recommend elastomeric respirators like Quebec and Ontario did.

Source: https://twitter.com/TurnbullWhitby/status/1360637001523986433

Ryan Turnbull 🇨🇦 ✓
@TurnbullWhitby

···

Elastomeric Respirators reduce the risk of Healthcare Workers contracting COVID-19 by 99%. It's been reported that the Ontario Govt has a stockpile of 100,000 (N99) of these lifesaving PPE. Quebec is using them, so why don't we? #onpoli #cdnpoli

montrealgazette.com
Quebec okays locally made masks after bureaucratic stall required U.S. approval

12:08 PM · Feb 13, 2021

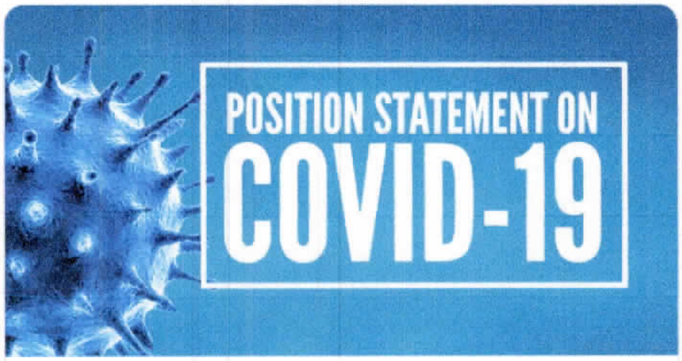
9 Retweets **2** Quote Tweets **31** Likes

DidYouVote? @proudNerdVoter · Feb 13, 2021

···

Replying to @TurnbullWhitby
Thank you MP Turnbull

@ontarionurses has been advocating for the masks to deaf ears in ford govt
So has @CFNU



nursesunions.ca
Position statement on COVID-19

New to Twitter
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18

March 24, 2021 tweet by Liberal MP Ryan Turnbull letting Nicolas Smit know that he forwarded the information on the importance of elastomeric respirators to federal Ministers and that he had spoken with the Ontario Liberal caucus about them as well. He then explains how he agrees with Nicolas Smit that healthcare workers should not continue to be left in inadequate PPE and deserve to have the best protection available.

Source: https://twitter.com/TurnbullWhitby/status/1374736466266492930

Lisa @SeeLuluRun · Mar 24, 2021 ···

Surgical masks scored a 2/100 for protection from an airborne virus.
This is how we're protecting teachers and students in classrooms?
This is what we're forcing people to downgrade to at vaccination sites and in healthcare settings?
Is the goal for people to get sick?

> **Nicolas Smit** @PPEtoheros · Mar 24, 2021
> @TurnbullWhitby @NataliaGoodwin @NickelBelt @JohnFraserOS the CBC just released a video explaining how surgical masks were tested in Canadian labs and did not filter half of the virus particles. @sri_srikrishna @lisa_iannattone @AleM_IT_CA @Christinekorda
> cbc.ca/player/play/18...

4 16 35

Nicolas Smit @PPEtoheros · Mar 24, 2021 ···

Replying to @SeeLuluRun

@TurnbullWhitby is the only politician to help with criticizing the government for refusing to let the public know elastomeric respirators are safe and readily available from the government stockpile. Ryan is a rare politician that truly cares about others and wants to help.
twitter.com/TurnbullWhitby...

> You're unable to view this Tweet because this account owner limits who can view their Tweets. Learn more

2 4 7

Ryan Turnbull 🇨🇦 🇺🇦
@TurnbullWhitby ···

Replying to @PPEtoheros and @SeeLuluRun

Thanks @PPEtoheros! I've forwarded info on elastomeric respirators to the Minister's office and have raised this issue to be brought up with Provincial colleagues. I continue to be in agreement that our frontline healthcare workers deserve to have the best protection.

10:54 AM · Mar 24, 2021

14 Retweets **3** Quote Tweets **33** Likes

Lisa @SeeLuluRun · Mar 24, 2021 ···

Replying to @TurnbullWhitby and @PPEtoheros

🙏🏻

3

Nicolas Smit @PPEtoheros · Mar 24, 2021 ···

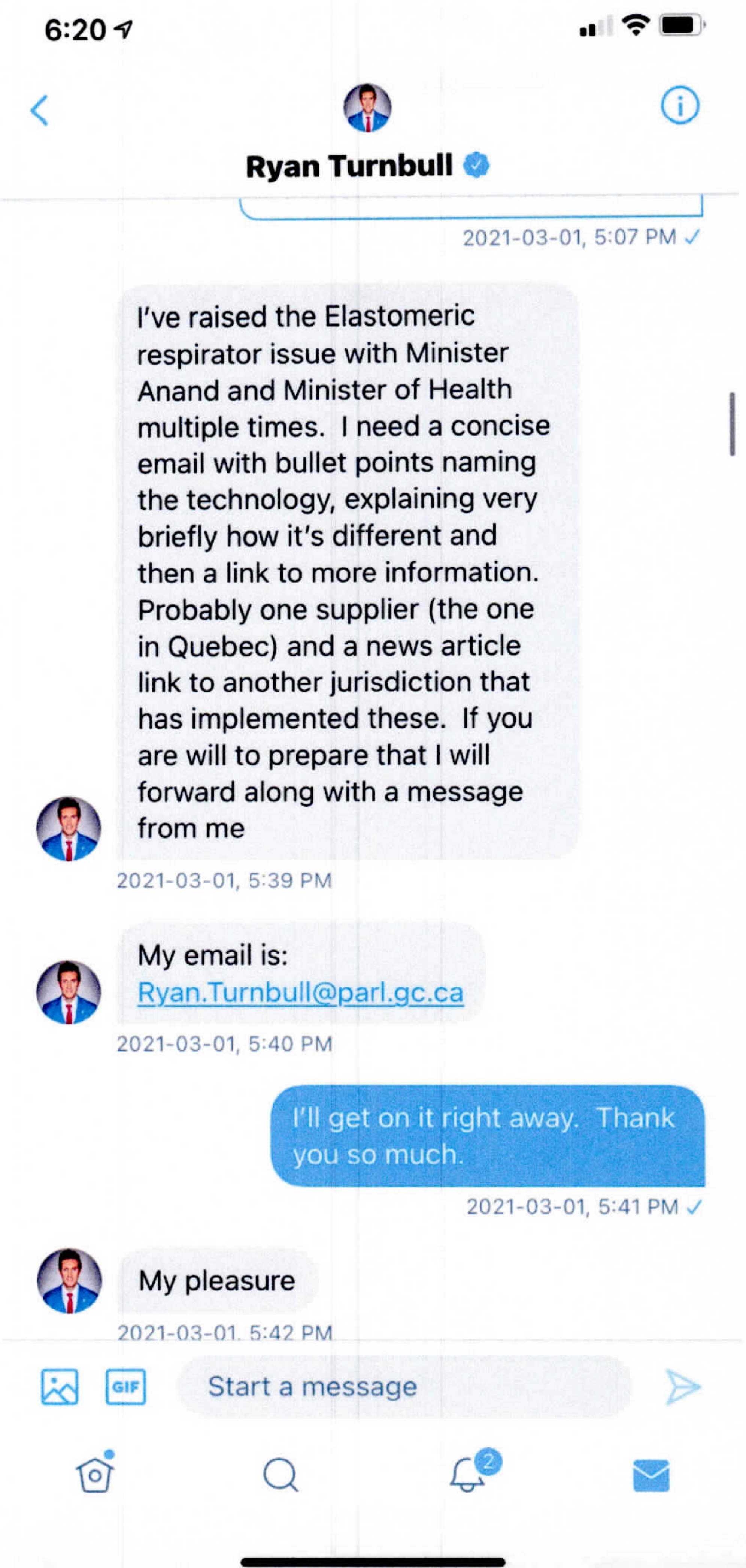
Replying to @TurnbullWhitby and @SeeLuluRun

You can let the provincial Liberals know that in the US, the federal government is now telling workplace inspectors to use elastomeric respirators instead of N95s since they don't think N95s are as effective in high risk workplaces such as food plants. osha.gov/memos/2021-03-...

19

March 1 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit about how he had repeatedly spoken with Minister Anand and the Minister of Health about the widespread negligence that kept occurring around elastomeric respirators. He then asks Nicolas to write a detailed email with as much information as possible and that he would share it with the Ministers along with a message from him.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit



Ryan Turnbull

2021-03-01, 5:07 PM ✓

I've raised the Elastomeric respirator issue with Minister Anand and Minister of Health multiple times. I need a concise email with bullet points naming the technology, explaining very briefly how it's different and then a link to more information. Probably one supplier (the one in Quebec) and a news article link to another jurisdiction that has implemented these. If you are will to prepare that I will forward along with a message from me

2021-03-01, 5:39 PM

My email is: Ryan.Turnbull@parl.gc.ca

2021-03-01, 5:40 PM

I'll get on it right away. Thank you so much.

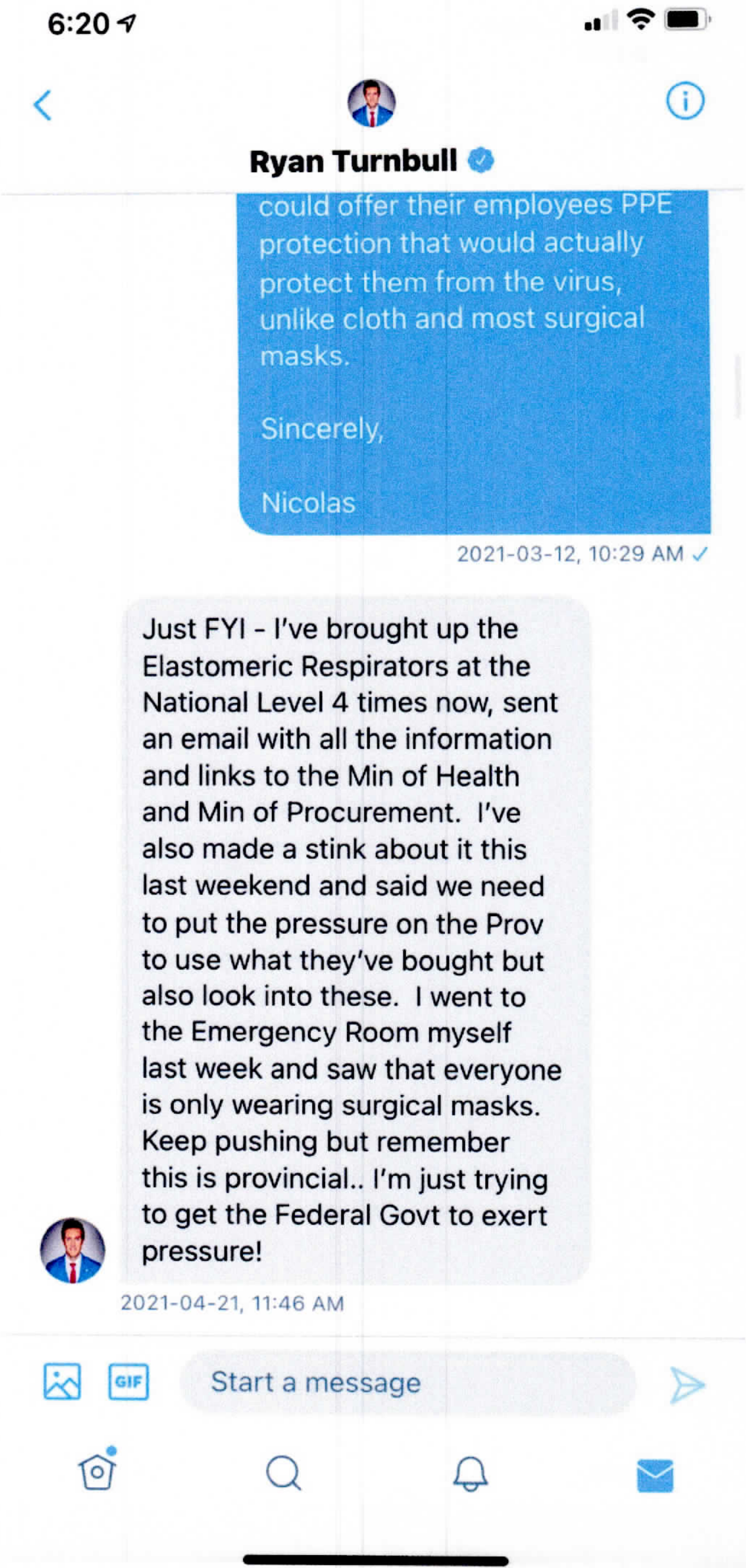
2021-03-01, 5:41 PM ✓

My pleasure

2021-03-01, 5:42 PM

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit explaining that he had brought up the importance of elastomeric respirators at the National Level 4 times including all the information Nicolas had shared with him. Ryan ~~says how he explained how the federal~~ government needs to put pressure on the province to use the locked up PPE stockpile and that the federal government should also be using these to better protect workers. He also explains how he had just went to the emergency room and saw that everyone was still wearing surgical masks.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit



Ryan Turnbull

could offer their employees PPE protection that would actually protect them from the virus, unlike cloth and most surgical masks.

Sincerely,

Nicolas

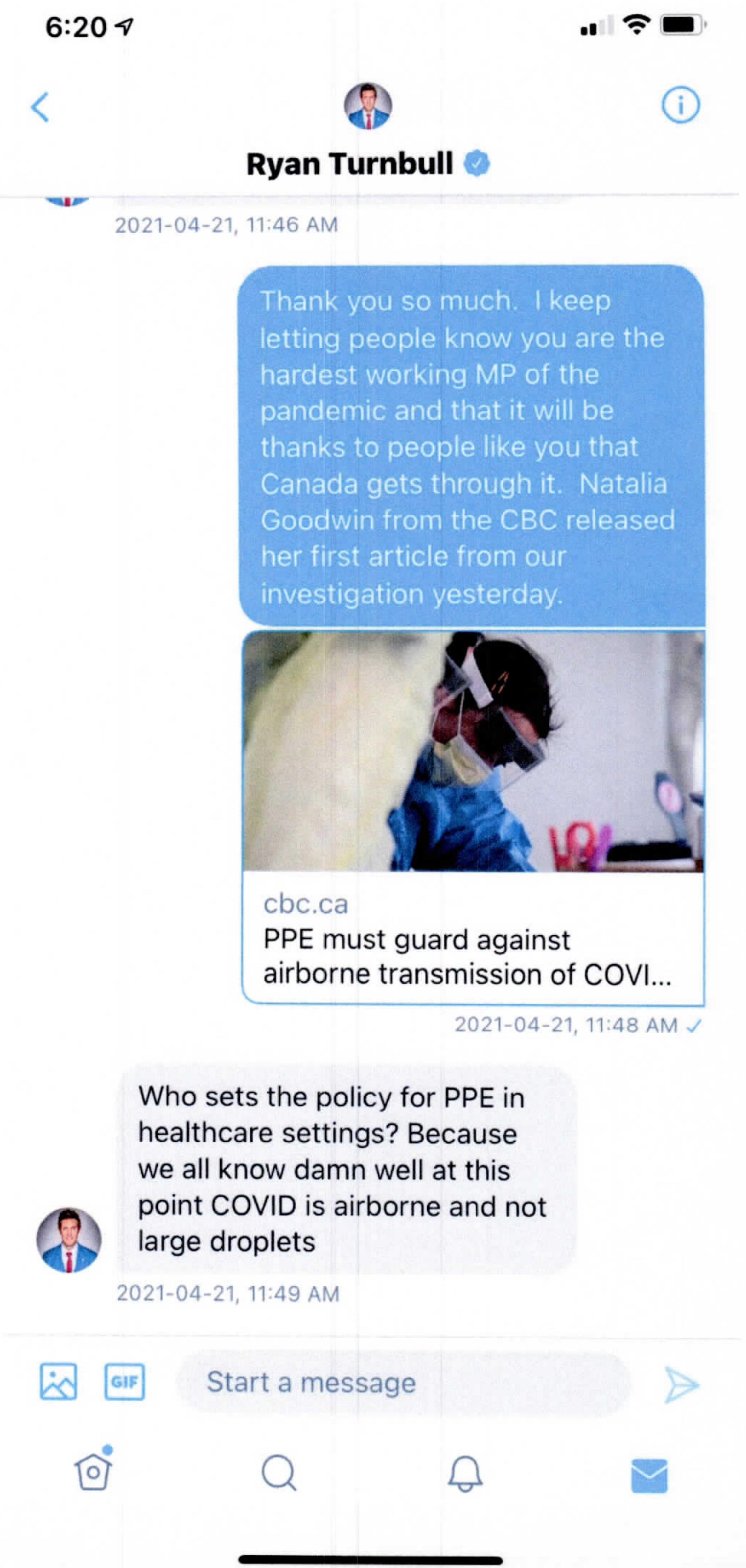
2021-03-12, 10:29 AM ✓

Just FYI - I've brought up the Elastomeric Respirators at the National Level 4 times now, sent an email with all the information and links to the Min of Health and Min of Procurement. I've also made a stink about it this last weekend and said we need to put the pressure on the Prov to use what they've bought but also look into these. I went to the Emergency Room myself last week and saw that everyone is only wearing surgical masks. Keep pushing but remember this is provincial.. I'm just trying to get the Federal Govt to exert pressure!

2021-04-21, 11:46 AM

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit asking who sets the policy for PPE in healthcare settings because everyone was well aware at that point that Covid was airborne and not spread by droplets like the government kept telling the public.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit



Ryan Turnbull

2021-04-21, 11:46 AM

Thank you so much. I keep letting people know you are the hardest working MP of the pandemic and that it will be thanks to people like you that Canada gets through it. Natalia Goodwin from the CBC released her first article from our investigation yesterday.

cbc.ca
PPE must guard against airborne transmission of COVI...

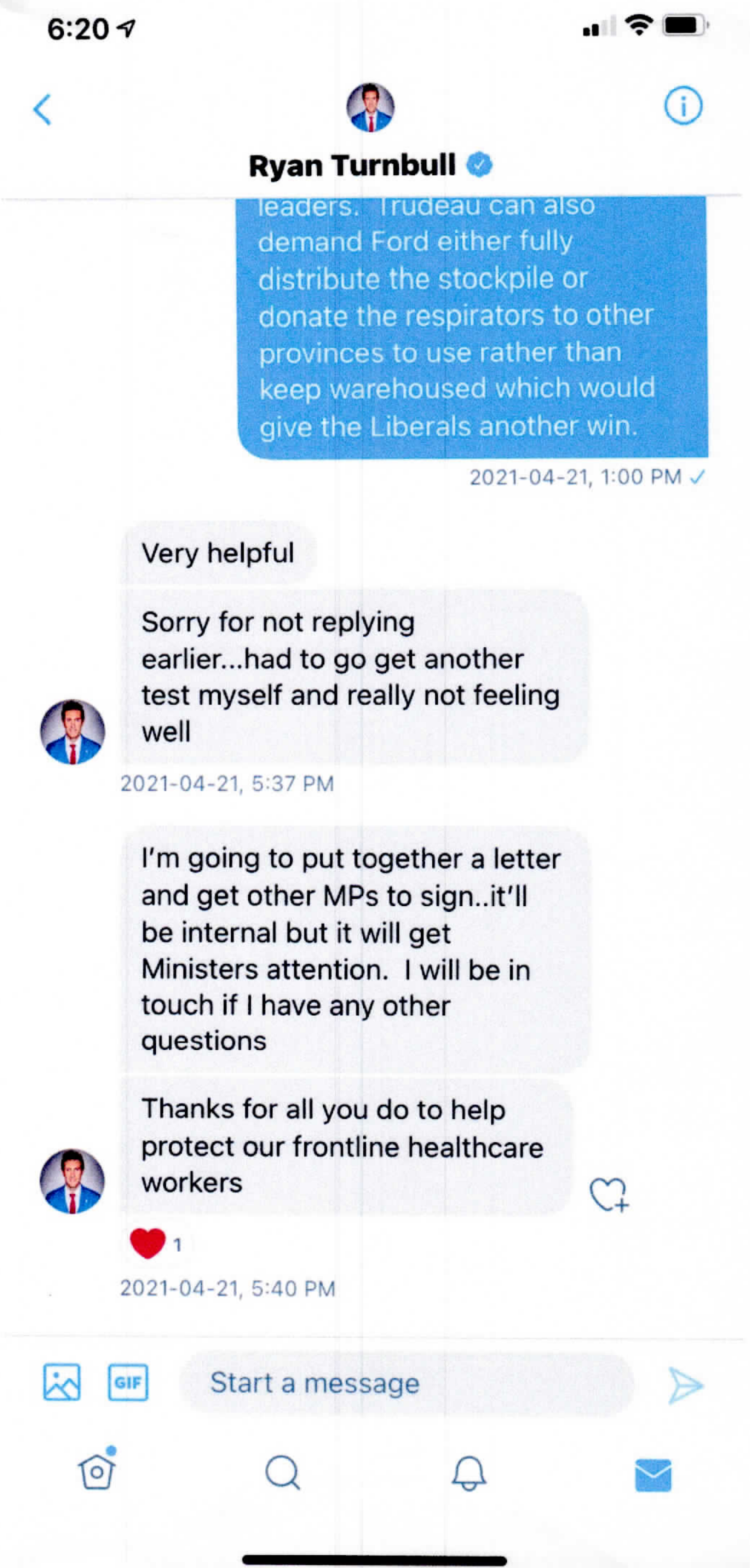
2021-04-21, 11:48 AM ✓

Who sets the policy for PPE in healthcare settings? Because we all know damn well at this point COVID is airborne and not large droplets

2021-04-21, 11:49 AM

April 21, 2021 Twitter private message from Liberal MP Ryan Turnbull to Nicolas Smit thanking Nicolas for everything he did to protect healthcare workers and lets Nicolas know that he's going to try to get other Liberal MPs to sign an internal letter to put internal pressure on the government to correct the widespread negligence around elastomeric respirators and finally apply public pressure so that the Ontario government distributes the locked up elastomeric respirators.

Source: Twitter private message from MP Ryan Turnbull to Nicolas Smit



Ryan Turnbull

leaders. Trudeau can also demand Ford either fully distribute the stockpile or donate the respirators to other provinces to use rather than keep warehoused which would give the Liberals another win.

2021-04-21, 1:00 PM ✓

Very helpful

Sorry for not replying earlier...had to go get another test myself and really not feeling well

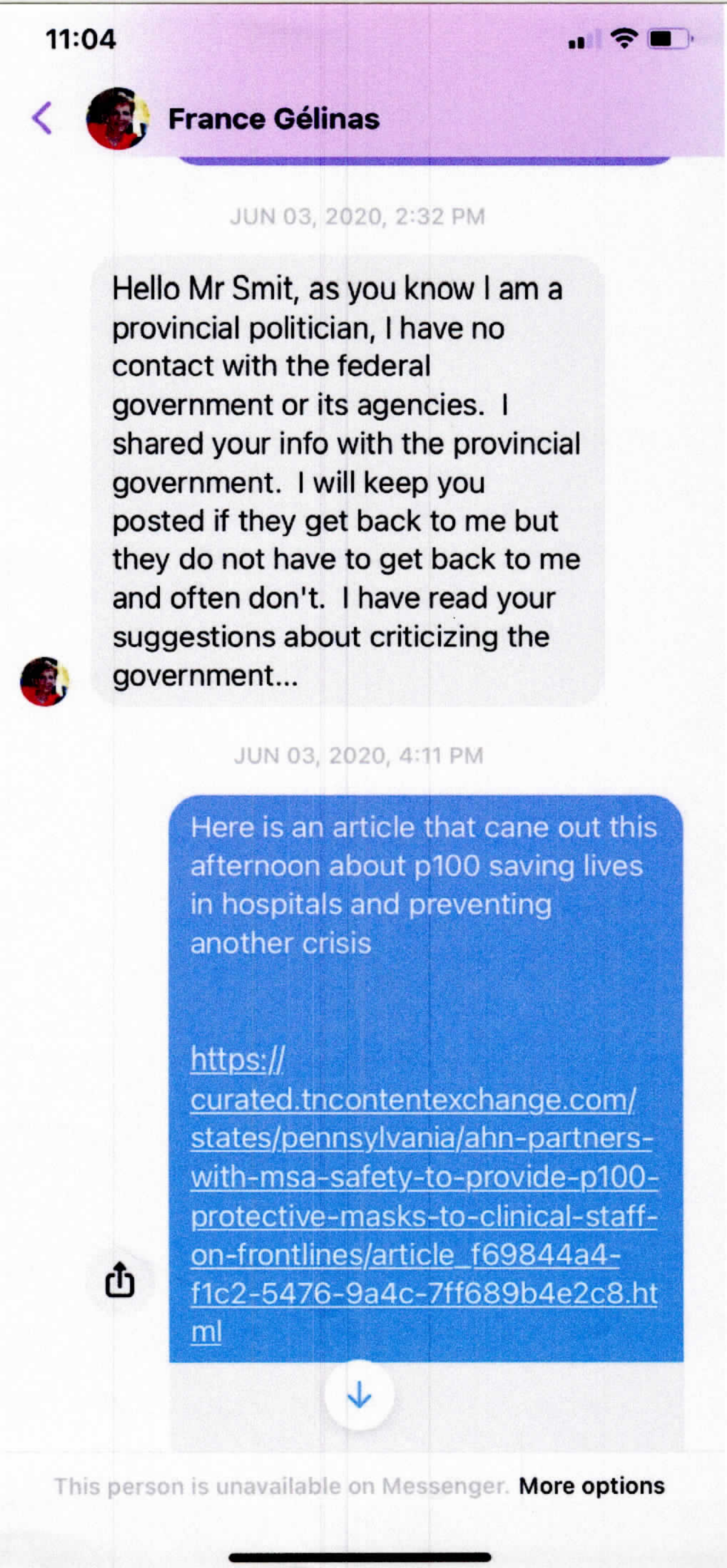
2021-04-21, 5:37 PM

I'm going to put together a letter and get other MPs to sign..it'll be internal but it will get Ministers attention. I will be in touch if I have any other questions

Thanks for all you do to help protect our frontline healthcare workers

❤ 1

2021-04-21, 5:40 PM



JUN 03, 2020, 2:32 PM

Hello Mr Smit, as you know I am a provincial politician, I have no contact with the federal government or its agencies. I shared your info with the provincial government. I will keep you posted if they get back to me but they do not have to get back to me and often don't. I have read your suggestions about criticizing the government...

JUN 03, 2020, 4:11 PM

Here is an article that cane out this afternoon about p100 saving lives in hospitals and preventing another crisis

https://curated.tncontentexchange.com/states/pennsylvania/ahn-partners-with-msa-safety-to-provide-p100-protective-masks-to-clinical-staff-on-frontlines/article_f69844a4-f1c2-5476-9a4c-7ff689b4e2c8.html

This person is unavailable on Messenger.

Section B

Government recommendations that prove the government was well aware of the importance of elastomeric respirators, that they provided significantly better protection than surgical masks and that they were not dangerous as the public is still lead to believe

1

Picture guidelines for Ontario Long term care home workers provided by the Ontario government so long term care homes would know how to use the type of elastomeric respirator the government had readily available in the stockpiles.

Source:
https://www.ltchomes.net/LTCHPORTAL/Content/Snippets/Product%20Overview%20for%203M%207500-Series%20Reusable%20Elastomeric%20Respirator.pdf

2

April 2020 Public Health Ontario Document on what is known about reuse of Personal Protective Equipment. This document explains that elastomeric respirators are safe alternatives to N95s, that using expired N95s is preferable to decontaminating N95s for reuse, that decontaminating N95s can damage N95s rendering them unable to protect those wearing them and that it is a crisis last resort option. It also says that elastomeric respirators can be used instead of disinfecting N95s for reuse and that healthcare workers will need special training if they are to be forced to reuse N95s.

Source: https://www.publichealthontario.ca/-/media/Documents/nCoV/COVID-WWKSF/what-we-know-reuse-of-personal-protective-equipment.pdf?rev=b2d7b93c8b5c498e9b5d91fdb9c2b3de&sc_lang=en

3

April 15 2020 Ontario Health PPE guidelines for extended use of N95s as well as using expired N95s. It explains that extended use is preferred over reuse, that using expired N95s should only be considered if there is a PPE shortage and that expired N95s are no longer consider approved by NIOSH (CDC). It mentions that studies show reusing N95s was very dangerous and that surgical masks shouldn't be used for protection from aerosols or airborne transmission due to the gaps that allow infectious air to bypass the mask.

Source:
https://www.hqontario.ca/Portals/0/documents/evidence/reports/extended-use-and-layering-of-n95-respirators-and-use-of-expired-ppe.pdf

4

April 7, 2020 Ontario Health PPE document explaining all the countries that have filters hospitals can use if they run out of elastomeric respirator filters approved by NIOSH. It also shows how there are many filters on elastomeric respirators that can be used which provide even greater protection than N95s masks.

Source: https://www.hqontario.ca/Portals/0/documents/evidence/reports/n95-equivalents-as-an-alternative-to-n95-respirators-in-a-health-care-setting.pdf

5

May 10, 2020 Ontario Health guidelines to help optimize the PPE supply. It explains that only in the context of PPE shortages should extended use or expired N95s be considered.

Source: PDF the Ontario government removed from their website but is archived

6

September 22, 2020 Ontario Health guidelines to help optimize the PPE supply. It explains how elastomeric respirators should be used if hospitals are experiencing N95 shortages and that the exhalation valve can be covered so that they offer source control to protect those around the wearer.

Source: PDF the Ontario government removed from their website but is archived

7

February 25, 2021 Ontario Health guidelines to help optimize the PPE supply. It explains how healthcare workers are to wear surgical masks around patients that have confirmed Covid infections plus repeats how elastomeric respirators should be used as N95s alternatives and how to cover the valve if source control is needed.

Source: https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

8

January 4, 2021 Manitoba government Shared Health Covid-19 guidance on using elastomeric respirators in healthcare settings. It explains how to safely use elastomeric respirators and how to cover the valve if additional source control is needed.

Source: https://sharedhealthmb.ca/files/covid-19-reuse-of-elastomeric-respirators.pdf

9

British Columbia Centre for Disease Control and BC Ministry of Health guidance on elastomeric respirators for source control in healthcare settings. This guideline explains how surgical masks are insufficient to properly protect healthcare workers from droplet transmission since droplets can get through the gaps and that healthcare workers should use tight fitting respirators like elastomeric respirators to ensure the best protection possible. It explains how there aren't any studies to prove exhalation valves pose a danger for those around the wearer but that healthcare workers can cover the valve if additional source control is wanted.

Source: http://www.bccdc.ca/Health-Professionals-Site/Documents/COVID-19-PPE/EHFR_GuidanceSourceControl.pdf

10

US Government OSHA workplace guidelines to help workplaces prepare for Covid-19 released in March 2020. It explains that if workplaces don't have enough N95s to consider using elastomeric respirators as they provide better protection and are more comfortable than N95s.

Source: https://www.osha.gov/sites/default/files/publications/OSHA3990.pdf

11

Porcupine Health Unit Designated Officers Manual titled Reducing The Risk for Front-Line Staff issued in 2019. This manual was adapted from the Ontario Association of Designated Officers 2015 (revised 2019). This manual explains how workers can use elastomeric respirators for protection from both droplet as well as airborne transmission.

Source: https://www.porcupinehu.on.ca/en/audiences/designated-officers/do-manual.pdf

Occupational Health and Safety Agency for Healthcare in BC report issued on April 30, 2004 titled Protecting the Faces of Health Care Workers: Knowledge Gaps and Research Priorities for Effective Protection Against Occupational-Acquired Respiratory Infectious Diseases. This report shows how elastomeric respirators were known to reduce risk of infection about 3 times better than an N95 and close to 20 times better than a surgical mask.

Source:
https://www.paho.org/hq/dmdocuments/2009/Protecting%20the%20faces%20of%20health%20care%20workers.pdf

1

Picture guidelines for Ontario Long term care home workers provided by the Ontario government so long term care homes would know how to use the type of elastomeric respirator the government had readily available in the stockpiles.

Source:
https://www.ltchomes.net/LTCHPORTAL/Content/Snippets/Product%20Overview%20for%203M%207500-Series%20Reusable%20Elastomeric%20Respirator.pdf

Contents of this Document

1. Product Overview
2. Assembly by User
3. Donning and Doffing
4. Daily Cleaning Protocol

Product Overview - 3M 7500-Series Reusable Elastomeric Respirator

3M™ Half Facepiece Reusable Respirator 7500 Series is a plastic and silicone respirator that helps provide protection against particulates and a wide variety of gasses and vapours when used with approved 3M cartridges and filters. When properly fitted and used with approved 3M™ cartridges and filters, this respirator (commonly referred to as a "mask") helps provide respiratory protection at concentrations up to 10 times the Permissible Exposure Limit (PEL)[1].

Benefits of Use:

- This product can be repeatedly used, cleaned, disinfected & stored
- Elastomeric respirators can be used when conducting Aerosol generating medical procedures (AGMPs) in appropriate health settings when disposable N95 supply is scarce
- A tight fit can be achieved through adjustable straps on the device
- The mask is considered suitable and a comfortable option for long-term wear

Considerations for Use:

- Product is bulkier than a disposable N95s and can impede line of sight or communication with others.
- Implementation support and clinician education may be required to support clinicians with managing appropriate cleaning and disinfection procedures, or replacement of filters
- The exhalation valve on the mask is not filtered and does not offer source control if the wearer is infected
- Should not be used if wearer has a beard, other facial hair or other conditions that prevent a good seal between the face and the reusable respirator

Ontario Health's guidance during COVID-19 is to use elastomeric respirators for aerosol generating medical procedures (AGMPs) in situations where disposable N95 supply is low. **To enable source control, users of elastomeric respirators should place a**

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[1] https://www.3mcanada.ca/3M/en_CA/company-ca/all-3m-products/~/3M-Half-Facepiece-Reusable-Respirator-7502-medium-1-bag/?N=5002385+3293806334&rt=rud

surgical/procedural mask over the exhalation valve to filter the user's exhalation, whenever in use. This step is included in the assembly process illustrated below[2].

Assembly by User

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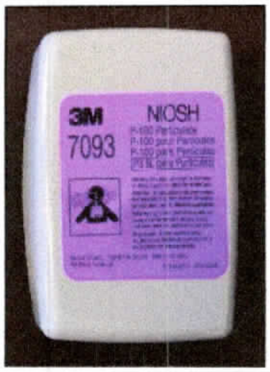
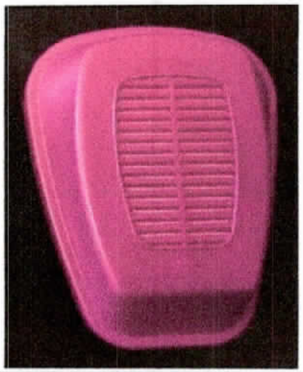
1. Initial check of the Mask

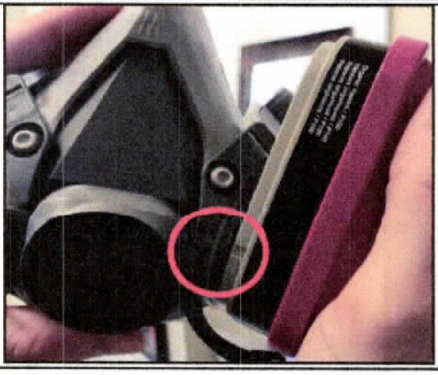
- Ensure the correct size
- Check for cracks, tears, dirt and distortion
- Ensure head and neck straps and clips are intact and elastic is not worn
- Inspect valves and filters for any damage





2. Filter Cartridges

- Filter cartridges come in two styles - Pink style, grey and purple style
- They perform equally and both are assembled the same way



3. Attaching the Filter Cartridges

- Look for the lines on the side of the strap, either side
- Look for the lines on the filter cartridge
- Align the two, rotate the cartridge and it will click into place; repeat for other side

Your mask is now ready for donning

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[2] https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

Donning and Doffing Process

1. **Donning the Mask**

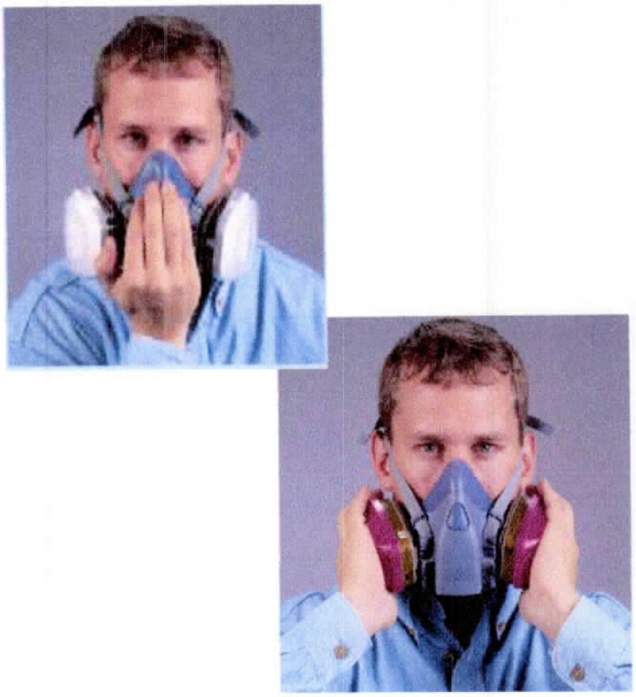
- Ensure the correct size
- Assemble the mask by attaching the filter cartridges
- Check the mask for any indication of damage
- Check all of the valves to see that they have each been fully inserted and are not torn
- Pull the harness over your head

2. **Adjust for Fit**

- Take bottom straps in both hands and hook together behind your neck
- Remove any hair from under the straps
- Position respirator as low as possible on bridge of nose for best possible fit and to avoid blocking your vision
- Tighten top straps first, then bottom straps if required
- If the straps are too tight, push out of the back of the buckles to loosen

3. Check for Air Leaks

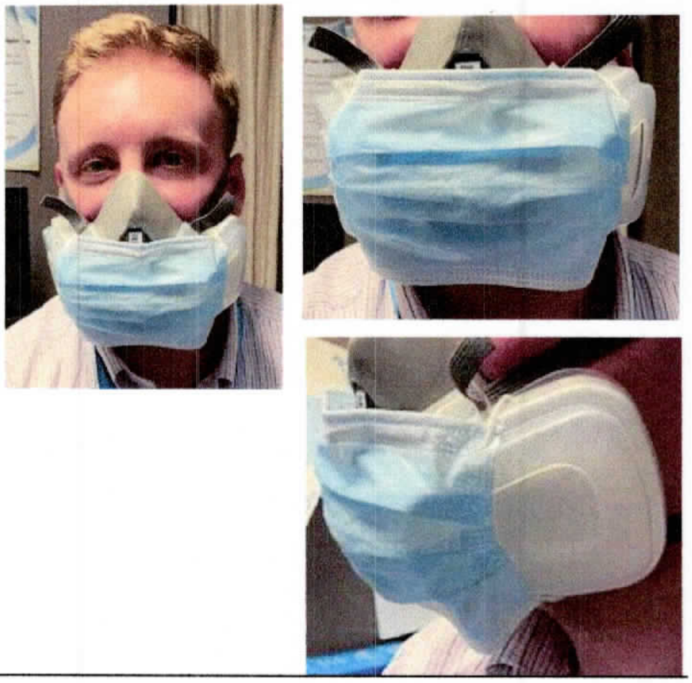
- Mask:
    - Place your hand over the front of the mask and blow out
    - You should feel pressure inside and feel no air leaking out of the mask
- Filter Cartridges:
    - Place both hands covering the side surfaces of the pink filter cartridges and suck in; or
    - Place your hands over the back of the grey/purple filter cartridges and suck in
    - In either case, you should feel the mask tighten and collapsed over the bridge of your nose
- If you cannot achieve a proper fit, do NOT enter a room for an AGMP, and notify your supervisor.



4. Cover the Exhalation Valve

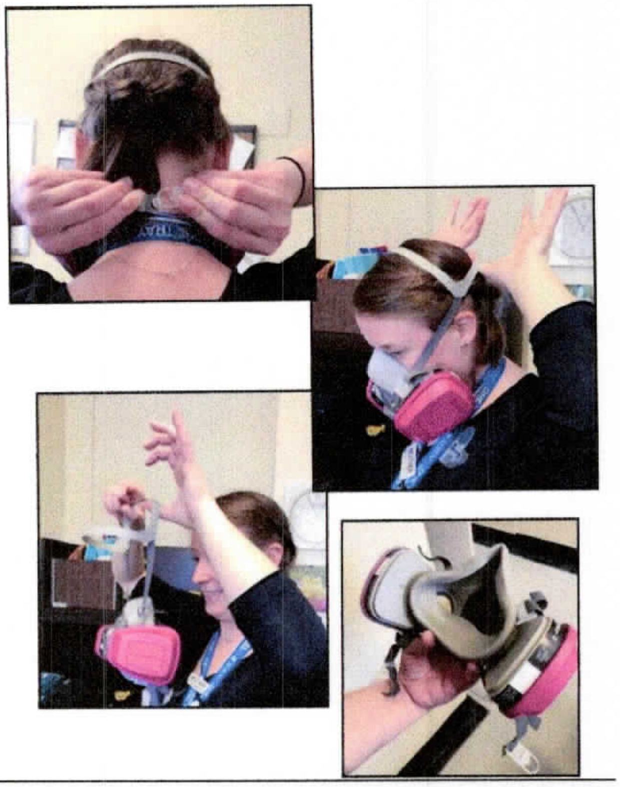
- Perform hand hygiene
- Place a surgical/procedural mask over the exhalation valve*
- Do not cover the inhalation filters (on the side) with the mask

** Covering the exhalation valve with a surgical/procedure mask is a recommendation of Ontario Health to prevent the user from spreading droplets through this value should the user unknowingly have COVID-19 infection*



5. Doffing the Mask

- Perform hand hygiene
- Remove and discard the surgical/procedural mask
- Perform hand hygiene again
- Reach behind and undo the back strap
- Reach up and tuck your thumbs under the top strap and pull forward
- Remove the mask away from your face and hold in the palm of your hand
- Conduct daily cleaning or interim wiping procedure as detailed below
- Store mask or prepare for return to Scrub Room
- Perform hand hygiene



Daily Cleaning

Cleaning and Disinfecting 3M Half and Full Facepieces[3]

1) Cleaning is recommended after each use. Nitrile or vinyl gloves should be worn during cleaning as well as other personal protective equipment (PPE) as indicated.
2) Remove any filters or cartridges and set them aside so they do not get wet. Please note that the filters and cartridges are reusable and should not be disposed of during cleaning. The facepiece may be further disassembled as necessary.
3) Inspect the facepiece per the *User Instructions* to identify any damage or excessive wear. Replace components or the entire facepiece as necessary.
4) Manually clean the facepiece by immersing it in warm water not to exceed 120°F (49°C), and scrub with soft brush until clean. Add neutral detergent. Do not use cleaners containing lanolin or other oils. **NOTE:** Solvents and strong detergents may damage 3M facepieces and should not be used for cleaning.
5) Rinse thoroughly with fresh warm water.
6) Disinfect by soaking, wiping or spraying the facepiece according to the user instructions for the selected disinfectant, including application and contact time.
7) Rinse, wipe or spray the facepiece thoroughly with fresh warm water.
8) Air dry in a non-contaminated area.
9) Inspect and reassemble the respirator as described in the *User Instructions*.
10) The respirator should be stored in a non-contaminated area when not in use.

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[3] https://multimedia.3m.com/mws/media/1793959O/cleaning-and-disinfecting-3m-reusable-respirators-following-potential-exposure-to-coronaviruses.pdf

Interim Wipe Cleaning and Disinfection of 3M Half Facepieces[4]

Wipe cleaning and disinfection of the facepiece can be considered as an interim method. This method is not to be the only method of cleaning.

1) If gross contamination or facial oil is present, a cleaning step should be performed before disinfection. Wipe all components with cleaning solution, including the interior and exterior of the facepiece and head harness.
2) Wipe the interior and exterior of the facepiece and head harness with the selected disinfectant, following the disinfectant user instructions including application and contact time.
3) Wipe all components with clean water to remove residual chemical.
4) Air dry or hand dry prior to next use in a non-contaminated area.
5) Inspect prior to use as described in the *User Instructions*.
6) The respirator should be stored in a non-contaminated area when not in use.

For more information please visit the below links:

1) **Ontario Health Guidance on use of elastomerics:**
   https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

2) **3M Tutorial on Assembly of Mask:**
   https://www.youtube.com/watch?v=mIWyMPFwEI8

3) **3M Detailed Instruction Sheet:**
   https://multimedia.3m.com/mws/media/147813O/3m-half-facepiece-respirator-7500-series-user-instructions.pdf

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[4] https://multimedia.3m.com/mws/media/1793959O/cleaning-and-disinfecting-3m-reusable-respirators-following-potential-exposure-to-coronaviruses.pdf

April 2020 Public Health Ontario Document on what is known about reuse of Personal Protective Equipment. This document explains that elastomeric respirators are safe alternatives to N95s, that using expired N95s is preferable to decontaminating N95s for reuse, that decontaminating N95s can damage N95s rendering them unable to protect those wearing them and that it is a crisis last resort option. It also says that elastomeric respirators can be used instead of disinfecting N95s for reuse and that healthcare workers will need special training if they are to be forced to reuse N95s.

Source: https://www.publichealthontario.ca/-/media/Documents/nCoV/COVID-WWKSF/what-we-know-reuse-of-personal-protective-equipment.pdf?rev=b2d7b93c8b5c498e9b5d91fdb9c2b3de&sc_lang=en

Public Health Ontario | Santé publique Ontario

SYNOPSIS

(ARCHIVED) COVID-19 – What We Know So Far About… Reuse of Personal Protective Equipment

Published: April 2020
Archived: February 2022

ARCHIVED DOCUMENT

This archived content is being made available for historical research and reference purposes only. PHO is no longer updating this content and it may not reflect current guidance.

Introduction

"What We Know So Far" documents are intended to provide an overview of some of the published and unpublished reports related to emerging issues with respect to coronavirus disease 2019 (COVID-19). The reports are found through ongoing scanning of the published literature and scientific grey literature (e.g., ProMed, CIDRAP, Johns Hopkins Situation Reports), as well as media reports. It is recognized that there may be additional information not captured in this document. As this is a rapidly evolving outbreak, the information will only be current as of the date the document was written.

Key Points

- Most personal protective equipment (PPE) is designed for single use, but in situations where supply is limited, extended use (continued use between patients without doffing when providing care to patients infected with the same pathogen) and reuse may be considered.
- PPE designed for reuse (e.g. elastomeric respirators) is a safe alternative to single-use PPE. Cleaning and disinfection of the product must follow the manufacturer's instructions for use.
- Expired stockpiles of single-use PPE (e.g. masks, N95 respirators), if available and intact, are preferable to decontaminating single-use PPE.
- If reuse is considered, it should not occur without adequate disinfection processes. Contamination of respirator surfaces is common, and doffing or re-donning of the same respirator without adequate disinfection may result in infection transmission.
- Disinfection and reuse of disposable PPE for reuse (N95 respirators) may be possible, but the processes used may compromise the integrity of the product and impact its effectiveness. Considerable logistical issues need to be considered for this approach to be feasible.

Background

Currently, a significant proportion of PPE, including gloves, gowns, procedure masks, respirators, and eye protection (face shield or goggles), is recommended for single use. However, during a pandemic, increased demand for PPE can lead to lack of supply. As a result, strategies have been explored to conserve single-use PPE through extended use and development of procedures to allow for reuse. These procedures may involve removing, storing and re-donning PPE in such a way that contamination is avoided; extended use (i.e., continued use between patients with the same diagnosis); and/or decontamination protocols. This synopsis provides a summary of the existing evidence and recommendations around PPE decontamination.

The term "decontamination" refers to a process of destruction or otherwise rendering non-infectious the surface of an object.[1] The term reprocessing refers to cleaning, disinfection and sterilization of reusable devices and equipment in healthcare settings.

N95 Respirators

There is some evidence that decontamination of N95 respirators may be possible, particularly through the use of UV radiation. N95 filtering face piece respirators are designed to achieve close facial fit and very efficient filtration of airborne particles. They are disposable, designed for single use and the outer surface may be contaminated after use, potentially acting as a vehicle of transmission. Reprocessing may decontaminate the surface of the respirator but may compromise the filtering efficiency and fit of the respirator. As a result, once reprocessed, N95 respirators lose their National Institute for Occupational Safety and Health (NIOSH) certification. When evaluating whether reprocessing can be recommended, there are several considerations including:

- The effectiveness of the reprocessing at rendering organisms non-infectious, noting that data on the infective dose of COVID-19 is unknown, so the relevance of log reductions of viruses as a means of measuring decontamination is also unknown.
- The effect on the integrity of the respirator (penetration, resistance, material strength, shape).
- The safety for the user (possible end-user exposure to harmful chemicals used in decontamination).
- The number of reprocessing cycles that can be performed and number of times a respirator can be worn without loss of integrity:
    - A study (Bergman et al.) evaluating the impact of multiple consecutive donnings on respirator fit found that respirators can be donned and doffed 5 consecutive times before fit drops below the acceptable threshold (fit factor <100; fit factor is a quantitative estimate of the fit of a specific respirator to an individual).[2]
    - However, a study (Vuma et al.) evaluating the impact of multiple consecutive donnings of respirator fit by 25 users found that 52% of wearers had ≥100 for overall fit factor after 6 donnings. Two subjects (8%) had a fit factor <100 on the second test, 6 (24%) on the third test, 8 (32%) on tests 4 to 6. Infrequent users had overall higher fit factors when compared to frequent users after all 6 donnings. The authors concluded that donning practices probably accounted for the fit test failures.[3]
- The feasibility of reprocessing from an operational standpoint (e.g., equipment and materials availability) and at the scale required for the situation.
- From a system perspective, alternatives to reprocessing may be available, e.g., elastomeric half masks intended to be disinfected and reused; expired respirators.

The evidence for various methods of N95 respirator decontamination is summarized below.

Ultraviolet Germicidal Irradiation (UVGI)

UVGI has the potential to decontaminate N95 respirators from respiratory viruses, including coronaviruses:

- UVGI effectively inactivates a wide range of microorganisms, including coronaviruses, by causing photochemical changes to nucleic acids and therefore disrupting replication; this occurs optimally at a wavelength of around 260nm (range 200-320nm).[4] The UVGI dose required to disable 90% of coronaviruses in water is 2.1 mJ/cm^2, and for SARS coronaviruses the range in one source is 22-304 mJ/cm^2[4,5,6]. For Influenza A it is 2.3 mJ/cm^2, and for adenoviruses it is 90.3mJ/cm^2, all in the 200-320nm wavelength range.[4]
    - Heimbuch et al. evaluated UVGI at 254 nm on 6 types of respirators. This process resulted in virus recovery below the detection limit, or a >4 log reduction in viable H1N1.[7]
    - Lore et al. evaluated UVGI at 254 nm (15 minutes convex side) on two N95 respirator models. This process resulted in a >4 log reduction in detectable H5N1.[8] Both respirator models had <5% penetration by 300 nm particles and thus still met N95 filtration criteria.[8]
    - Tseng et al. evaluated the presence of single stranded RNA viruses on surfaces and estimated an inactivation dose of 1.3-3.2 mJ/cm^2, at a wavelength of 253.7nm.[9] Although coronaviruses are single stranded RNA viruses, these were not specifically tested.
- UV radiation has been shown to be less effective in reducing virus viability on respirator straps, which may require the additional step of use of a virucidal disinfectant on strap surfaces.
    - A study (Mills et al.) evaluating UVGI with 1,000 mJ/cm^2 on N95 respirators for 1 minute resulted in a $\geq$ 3 log reduction in H1N1 on respirator straps in the presence of artificial soil in only 7/15 models tested.[10]
    - Some types of N95 respirators are not amenable to UVGI because of shadowing due to differences in shape.[10]
- Integrity of the respirator may be impacted by very high UV intensities (much higher than what is required for efficacy) and increased number of cycles performed.
    - A study (Lindsley et al.) evaluating the effects of N95 respirator function (particle penetration, strap breaking strength, and flow resistance) after application of UVGI in doses between 120-950 J/cm^2 to 4 different N95 models found a minimal increase in particle penetration (up to 1.25%), a minimal change in flow resistance, but a significant reduction in material integrity which varied by dose and model.[11]
    - UVGI at 40 W UV-C light for 15 minutes did not significantly affect the function / appearance of 9 different respirators.[12]
- In the context of the COVID-19 pandemic, the University of Nebraska has developed an N95 respirator decontamination procedure which applies UVGI at 60mJ/cm^2. Two 254nm UV lamps are directed towards wire hanging masks in a UV chamber for approximately 5 minutes per cycle.[13] The procedure also includes an elaborate method for collecting, transferring, decontamination, and repackaging to deliver back to the same healthcare user.[13]

Vaporized Hydrogen Peroxide

Vaporized hydrogen peroxide is an airborne disinfectant which can be used for room disinfection. Limited studies to date suggest that it may be effective at decontaminating N95 respirators, but safety concerns exist around off-gassing of residual disinfectant.

- Also with reference to the COVID-19 pandemic, a protocol at Duke University recommends vaporized hydrogen peroxide (480 ppm), applied over a 45-minute cycle to N95 respirators. They note a 6 log reduction in *Geobacillus stearothermophilus* spores and no harmful chemical by-products or residues identified on the decontaminated masks.[14]
- An FDA-funded study found that N95 respirators could potentially withstand up to 30 cycles of vaporized hydrogen peroxide decontamination and continue to function adequately, after which the elastic straps began to show degradation.[15]
- On March 29, 2020, the US Food and Drug Administration issued an Emergency Use Authorization for the Battelle Critical Care Decontamination System which uses vaporized hydrogen peroxide for decontaminating N95 respirators. [16] This system requires approximately 180 minutes of processing and 300 minutes of aeration and is not compatible with cellulose-based materials.
- A small pilot noted changes in odor post decontamination.[17]

Further data are needed on the safety of reuse and the potential for inhalation of residual disinfectant.

Microwave Generated Steam

There are several studies showing that microwave steam bags are effective at reducing influenza virus respirator contamination, but more information is needed on the impact on the integrity of the respirator.

- Heimbuch et al. evaluated microwave-generated steam to disinfect 6 commercial types of respirators and found a >4 log reduction in viable H1N1.[7]
- Lore et al. evaluated microwave-generated steam to disinfect two N95 respirator models and found a >4 log reduction in detectable H5N1.[8] Both respirator models had <5% penetration by 300nm particles and still met N95 filtration criteria.
- Fisher et al. evaluated microwave steam and found that water absorption varied by model (hydrophilic materials absorbed more water) which could be a concern. Steam did not impact filtration efficacy and the steam bags tested were 99.9% effective at inactivating bacteriophage MS2 (pathogenic virus surrogate) on respirators.[18]

Additional Considerations

Several other processes have been studied in small experiments. Further data on efficacy and safety are needed before they can be recommended.

- Isopropyl alcohol (70%), bleach, soap and water, dry heat sterilization (160 °C) were all found to reduce respirator filtration efficiency in one study.[12]

CDC Recommendations on Decontamination of Respirators[19]

- In times of limited supply, including the current COVID-19 pandemic, the US Centers for Disease Control and Prevention (CDC) suggests strategies such as extended use and use beyond the manufacturer's shelf life. They recently updated their strategies to optimize PPE supply, providing an overview of respirator reprocessing/decontamination as a "crisis capacity strategy." They note that decontamination processes may impact function and fit of respirators, and as such do not recommend decontamination as standard of care, but that in times of crisis may need to be considered.
- In this overview, they discuss UVGI, vaporous hydrogen peroxide, and moist heat (60°C and 80% RH) as having the greatest potential for decontamination of N95s.[19] Where decontamination is implemented where the intended N95 function cannot be verified, they recommend against using the decontaminated respirators for aerosol-generating procedure, i.e., reserve new respirators for aerosol-generating procedures.
- In all cases, reuse will require training for workers to properly inspect, handle, don, and seal check reprocessed N95s.
- Ethylene oxide is not recommended by the CDC as it may confer toxic effects to the wearer.

In summary, several methods show potential as possible options for reprocessing N95 respirators. However, logistical challenges would need to be addressed for reprocessing to be practicable for mass delivery. These include the availability of equipment; the capacity to meet the reprocessing need; and validated processes accounting for decontamination and integrity checks, and number of times respirators are reprocessed.

Gowns

Gowns are recommended for the care of suspected or confirmed COVID-19 patients by the CDC[20], the World Health Organization (WHO)[21], and Public Health Agency of Canada (PHAC)[22] for contact precautions. Reprocessing of disposable gowns is impractical due to the inability to launder, remove contamination and maintain integrity.

- A scoping literature search was completed using the SCOPUS database using the search terms "decontamination" and "gown" and no studies were found on decontamination and reuse of gowns.
- The CDC[23] recommends cloth gowns be laundered after each use. A combination of mechanical, thermal, and chemical factors results in the antimicrobial action of the laundering process – protocols may vary.[24]
- The CDC cites easy breakage of disposable gown ties and fasteners, making them less amenable to washing and reuse than reusable gowns. When disposable gowns are in short supply, they suggest a number of alternatives, e.g., extended use of gowns; using reusable (washable) patient gowns and laboratory coats.[23]

Eye Protection

Eye protection is available in various forms, such as face shields, goggles, and visors attached to surgical masks. Both disposable and reusable options are available. The CDC[20], WHO[21], and PHAC[22] recommend their use as part of droplet precautions. One study was found on decontamination of eye protection, using ultraviolet radiation (UV):

- Ziegenfuss et al. used a germicidal UV light cabinet (at 253.7 nm wavelength) using the bacterium *Staphylococcus aureus* as the indicator organism. Using minimal UV doses, 2.4 log reduction was achieved in *S. aureus* post-UV treatment. This study context was of lateral transmission e.g., between wearers of the same device with decontamination between uses, such as visitors at an industrial site.[25]

- The CDC's strategies for optimizing eye protection supply include[26]:
  - Shifting from disposable to reusable eye protection (e.g., goggles, safety glasses with tight adherence to the face and arms without vented areas, powered air purifying respirators).
  - Considering extended use (not removing eye protection between patients, unless visibly soiled or condensation is present), assuming clinical use is confined to patients infected with the same pathogen.

Face Masks

Face masks contain the droplets and secretions of the wearer and also protect the wearer from droplets, splashes, or sprays from landing in their mouth and nose. No studies were found on decontamination and reuse of disposable face masks.

- However, Lore et al. studied two models of N95 respirators, one of which was a combination N95 respirator/surgical mask inoculated with influenza. UVGI, microwave-generated steam, and moist heat all reduced the viral load by more than 4-log median tissue culture infective dose.[8] Both respirator models still met N95 filtration criteria; however, the respirator models were not tested post-contamination to determine if criteria for particle filtration efficiency, bacterial filtration efficiency, and fluid resistance for surgical masks were still met.[8]
- The CDC discusses, as examples, extended use (using the same mask for multiple patient encounters without removal) and use beyond the manufacturer's shelf life.[26]

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Ontario

April 15 2020 Ontario Health PPE guidelines for extended use of N95s as well as using expired N95s. It explains that extended use is preferred over reuse, that using expired N95s should only be considered if there is a PPE shortage and that expired N95s are no longer consider approved by NIOSH (CDC). It mentions that studies show reusing N95s was very dangerous and that surgical masks shouldn't be used for protection from aerosols or airborne transmission due to the gaps that allow infectious air to bypass the mask.

Source:
https://www.hqontario.ca/Portals/0/documents/evidence/reports/extended-use-and-layering-of-n95-respirators-and-use-of-expired-ppe.pdf

April 15, 2020

Ontario Health
Quality

Extended Use and Layering of N95 Respirators and Use of Expired Personal Protective Equipment: Supplemental Information

Key Messages

This supplemental information was generated to support decision-making around the extended use and layering of N95 respirators and use of expired personal protective equipment (PPE) during the novel coronavirus disease (COVID-19 or SARS-CoV-2) pandemic.

We examined the recommendations from national and international health authorities and organizations and completed a targeted search of published literature to determine what is known about extended use and layering of PPE and use of expired PPE, and found the following:

- Extended use of N95 respirators is preferred over reuse
- Layering of masks or face shields over N95 respirators may reduce droplet spray surface contamination
- In times of shortage, use of expired N95 respirators, surgical masks, isolation gowns, and gloves can be considered. Users should visibly inspect the product before use and if there are concerns with its integrity (such as degraded materials or visible tears), the product should be discarded

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Background and Context

On April 1, Ontario Health (Quality) received a request from the Ontario Health Secretariat for recommendations related to the layering of personal protective equipment (PPE) to enable extended use of PPE and use of expired PPE during the COVID-19 pandemic, with an emphasis on N95 respirators. In response to that request, this supplemental information provides a summary of recommendations from national and international health authorities, organizations, and grey literature.

Moving forward, alerts have been set up to monitor emerging evidence in addition to this summary.

Guidance on Extended Use of Respirators (i.e., Wearing a Respirator for Hours at a Time)

Extended use is defined as the wearing of a disposable respirator during serial patient encounters without the removal or re-donning of the device between encounters.[i] Both extended use and reuse pose a transmission risk to health care personnel due to potential respirator contamination. This transmission risk can be minimized if health care personnel adhere stringently to hand hygiene before and after handling the respiratory protection device.[i]

European Centre for Disease Prevention and Control Technical Report[ii]: "Infection Prevention and Control for COVID-19 in Health Care Settings"

Approaches to economizing the use of PPE in the event of shortages

- In the event of shortages, to reduce consumption and maximize the use of PPE, it is acceptable for staff to wear the same respirator while caring for multiple patients with COVID-19 for up to 4 to 6 hours. This is on the condition that the respirator is not removed between patients and is not damaged, soiled, or contaminated, or unless specifically contraindicated by the manufacturer (as per World Health Organization COVID-19 guidance[iii]).
- Surgical masks are designed for single use. Respirators are also usually discarded after use, but in the event of a shortage, they can be reused a limited number of times unless there is a risk of contamination through the deposition of infectious particles on the surface. Contamination of the surface of respirators and surgical masks entails a risk of infection when putting the device on again (donning) for reuse. Because SARS-CoV-2 survives in the environment, including on the surfaces of various materials such as tissue, there is a risk that the outer surface of respirators and surgical masks used during patient care may become contaminated. The risk of respiratory droplets contaminating the surface of surgical masks and respirators is considered to be lower when they are covered with a visor. In such cases, reuse of the respirator/surgical mask may be considered as a last-resort option to economize on use of PPE.

Association for Professionals in Infection Control and Epidemiology[i] (APIC): "APIC Position Paper: Extending the Use and/or Reusing Respiratory Protection in Healthcare Settings During Disasters"

- Extending the use or reusing respiratory protection is preferred over prioritizing the allocation of N95 respirators and surgical/procedure masks based on exposure risk
- Extended use is preferred over reuse
- Practices for extending the use and/or reusing a respirator:
    - The respirator should only be worn and/or reused by a single wearer
    - The respirator should not be removed, adjusted, or touched during patient care activities
    - Avoid contamination during use by not touching the outside of the respirator
    - Care should be taken to prevent touching the inside of the respirator
    - The respirator should be discarded after being used during an aerosol-generating procedure
    - The respirator should be discarded if it becomes grossly contaminated with the patient's bodily fluids, including blood or respiratory secretions. Note: this may be difficult for the wearer to discern. Health care personnel should be aware that even if not visibly soiled, the external surface of the respirator is always considered contaminated after use
    - The respirator must be discarded if it becomes obviously soiled or damaged (e.g., creased, torn, or saturated) or if breathing through the device becomes difficult
    - Consider using a surgical/procedure mask or face shield over the respirator to reduce/prevent contamination of the device. If masks are also in short supply, face shield use should be encouraged to help conserve masks.

Recommendations on Reuse of Respirators (i.e., Donning and Doffing Between Uses)

Reuse consists of removing and re-donning the same disposable respirator between serial patient encounters.[i] Both extended use and reuse pose a transmission risk to health care personnel due to potential contamination.[i] This transmission risk can be minimized if health care personnel adhere stringently to hand hygiene before and after handling the respiratory protection device.[i]

ECRI Clinical Evidence Assessment[iv]: "Safety of Extended Use and Reuse of N95 Respirators"

- Mechanical failure (e.g., broken straps and poor sealing between the mask and the user's face) with only a few reuses was common across FDA-cleared (i.e., for medical use) N95s
    - Two studies (Vuma et al. 2019[v] and Bergman et al. 2012[vi]) reported that 7% to 8% of N95s failed fitting after two uses and more than 20% failed after five uses
- Two studies found that 4% to 18% of H1N1 virus particles and more than 10% of M2 bacteriophage particles were viable after 4 to 6 days on 3M 8210 filters at room temperature. One of the studies (Brady et al. 2017[vii]) reported that 2% to 15% of M2 particles transferred to the users who donned contaminated N95s. The other study (Fisher et al. 2012[viii]) reported minimal M2 aerosolization (< 0.2%) from contaminated N95s in simulated cough tests

Guidance on Layering Personal Protective Equipment

Layering involves wearing more than one piece of PPE at the same time, which may be complementary items that provide protection to the same area (e.g., an N95 respirator with a face shield on top) or more than one of the same item (e.g., double gloves).

Centers for Disease Control (CDC)[ix]: "Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings"

- Consider using a cleanable face shield (preferred) over an N95 respirator and/or other steps (e.g., masking patients, using engineering controls) to reduce surface contamination
- If reuse of N95 respirators is permitted, respiratory protection program administrators should ensure adherence to administrative and engineering controls to limit potential N95 respirator surface contamination (e.g., using barriers to prevent droplet spray contamination)

CDC[x]: "Interim Domestic Guidance on the Use of Respirators to Prevent Transmission of SARS"

- If N95 respirators are reused for contact with SARS patients, implement a procedure for safer reuse to prevent contamination through contact with infectious droplets on the outside of the respirator
    - Consider wearing a loose-fitting barrier that does not interfere with fit or seal (e.g., surgical mask, face shield) over the respirator
    - Remove the barrier upon leaving the patient's room and perform hand hygiene. Surgical masks should be discarded; face shields should be cleaned and disinfected
- Respiratory protective devices with a filter efficiency of 95% or greater (e.g., N95, N99, N100) may not be available in some settings due to supply shortages or other factors. In this situation, a surgical (procedure) mask should be worn. Surgical masks will provide barrier protection against large droplets, which are considered to be the primary route of SARS transmission. However, surgical masks may not adequately protect against aerosol or airborne particles, primarily because they allow for leakage around the mask and cannot be fit-tested. The mask should resist fluid penetration and fit tightly around the mouth and nose when properly applied to the face

Institute of Medicine[xi]: "Reusability of Facemasks During an Influenza Pandemic"

Recommendation summary for extending the life of an N95 respirator for individual users

- Avoiding contamination will allow for limited reuse. If an individual user needs to reuse their own disposable N95 respirator, the committee recommends that it be done in the following manner:
    - Protect the respirator from external surface contamination when there is a high risk of exposure to influenza (i.e., by placing a medical mask or cleanable face shield over the respirator in such a way that prevents surface contamination but does not compromise the device's fit)

  - Use and store the respirator in such a way that the physical integrity and efficacy of the respirator will not be compromised
  - Practice appropriate hand hygiene before and after removal of the respirator and, if necessary and possible, appropriately disinfect the object used to shield it

ECRI Clinical Evidence Assessment[iv]: "Safety of Extended Use and Reuse of N95 Respirators"

- Two studies (Sinkule et al. 2013[xii] and Roberge et al. 2010[xiii]) of more than 30 models found that covering respirators with surgical masks had no clinically significant effect on breathing effort, gas exchange, and perceptions of comfort and exertion

Guidance on the Use of Expired Personal Protective Equipment

Most PPE items, including N95 respirators, surgical masks, and isolation gowns, have a limited shelf life, after which they should be discarded. According to Health Canada, the CDC, and the FDA, in times of increased demand and decreased supply, such as during the COVID-19 pandemic, consideration can be made to use PPE past its manufacturer-designated shelf life. The length of time an N95 respirator is stored beyond its shelf life or recommended conditions of storage may affect its performance.[xiv] This includes not only the filter media but also the headbands and nose-foam components, which may affect the seal.[xiv] The user should visibly inspect the PPE item before use, and if there are concerns (such as degraded materials, visible holes or tears, or discolouration) the product should be discarded.[xv]

According to Health Canada, there are two main types of medical gowns: isolation gowns and surgical gowns. Medical gowns distributed and sold in Canada are grouped by category and level of risk. There are four levels of risk that can be broken down into two categories: low risk (levels 1 and 2) and high risk (levels 3 and 4)[xvi]:

Low-risk category

- Level 1—minimal risk; use for standard precautions/isolation and simple procedures
- Level 2—low risk; use for minimally invasive surgery

High-risk category

- Level 3—moderate risk; use for open gastrointestinal surgeries
- Level 4—high risk; use for open cardiovascular and trauma procedures

Available guidance (below) on the use of expired gowns is not specific to category and level of risk.

Health Canada[xiv]: "Optimizing the Use of Masks and Respirators During the COVID-19 Outbreak"

Use of N95 masks beyond their shelf life

- N95 masks that are past their designated shelf life are no longer CDC National Institute for Occupational Safety and Health (NIOSH)–approved, as all manufacturer-designated conditions of use must be met to maintain CDC NIOSH approval. However, in times of increased demand and decreased supply, consideration can be made to use these expired N95 respirators. An expired mask can still be effective at protecting the health care provider if:
    - The straps are intact
    - There are no visible signs of damage
    - They can be fit-tested
- Health care providers should inspect the mask and perform a seal check
- There is no specific timeframe beyond the expiry dates for N95 respirators at which they would no longer be considered suitable for use

Use of surgical masks beyond their shelf life

- Masks can still be used beyond their shelf life to protect health care providers. Health care providers should check that the straps are intact and there are no visible signs of damage. There is no specific timeframe beyond the expiry dates for masks at which they would no longer be considered suitable for use

CDC[xvii]: "Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life"

The CDC has tested samples of N95 masks past their expiration date (manufactured between 2003 and 2013) and found that many models continue to perform in accordance with CDC NIOSH performance standards. Therefore, the CDC NIOSH believes the following products, despite being past their manufacturer-designated shelf life, should provide the expected level of protection to the user if the masks have been stored properly. These models are:

- 3M 1860
- 3M 1870
- 3M 8210
- 3M 9010
- 3M 8000
- Gerson 1730
- Medline/Alpha Protech NON27501
- Moldex 1512
- Moldex 2201

Models that are not tested but expected to perform in the same manner:

- 3M 1860S (a smaller version of 3M 1860)
- 3M 8000 (if the straps are intact and there are no visible signs of damage)

Models that may not provide the expected level of protection:

- Kimberly-Clark 46827 (size small) and Kimberly-Clark 46727 (size regular) when past their manufacturer-designated shelf life of 5 years

The CDC NIOSH recommends that users should take the following precautionary measures before using an expired respirator in the workplace:

- Visually inspect the N95 to determine if its integrity has been compromised
- Check that components such as the straps, nose bridge, and nose foam material did not degrade, which can affect the quality of the fit and seal and therefore the effectiveness of the respirator
- If the integrity of any part of the respirator is compromised, or if a successful user seal check cannot be performed, discard the respirator and try another
- Users should perform a user seal check immediately after they don each respirator and should not use a respirator upon which they cannot perform a successful user seal check

CDC[xviii]: "Strategies for Optimizing the Supply of Isolation Gowns"

Most isolation gowns do not have a manufacturer-designated shelf life. According to the CDC, those that do and that are past their manufacturer-designated shelf life can be considered for use. If there is no date available on the gown label or packaging, facilities should contact the manufacturer.

U.S. Food and Drug Administration[xix]: "Frequently Asked Questions on Shortages of Expired Gowns, Surgical Masks, and Medical Gloves"

According to the FDA, expired gowns, surgical masks, and gloves may still offer some protection. The user should visibly inspect the product before use and if there are concerns (such as degraded materials, visible holes or tears, or discoloration) the product should be discarded. As a conventional capacity strategy, expired products may be used for training and demonstration purposes where barrier protection is not needed.

ECRI Clinical Evidence Assessment[iv]: "Safety of Extended Use and Reuse of N95 Respirators"

- Expired N95 stocks: Devices beyond their labelled shelf life may retain adequate filter performance if stored properly, but aged rubber bands and other elastic parts may not ensure a proper fit. Also, heat and humidity can compromise the filter material. Devices should be closely inspected for signs of damage (e.g., discoloration, residue shedding) and fit-tested before use.

Peer-Reviewed Publications on Use of Expired Personal Protective Equipment

Lin et al. (2020)[xx] evaluated the filtration performance of five N95 filtering facepiece respirator (N95FFR) models following long-term storage, removal of charge using isopropanol alcohol (IPA), autoclaving, or treatment with gamma-radiation. The models evaluated were 3M-8210, 3M-1860, SH-2950, 3M-8511 and UVEX-3200, which were stockpiled by the Taiwanese CDC after the SARS outbreak. The study found that without decontamination by gamma irradiation or the use of an autoclave, all expired N95FFR models maintained acceptable filtration performance and still could be used to collect aerosol

4

April 7, 2020 Ontario Health PPE document explaining all the countries that have filters hospitals can use if they run out of elastomeric respirator filters approved by NIOSH. It also shows how there are many filters on elastomeric respirators that can be used which provide even greater protection than N95s masks.

Source: https://www.hqontario.ca/Portals/0/documents/evidence/reports/n95-equivalents-as-an-alternative-to-n95-respirators-in-a-health-care-setting.pdf

Ontario Health
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N95 Equivalents as an Alternative to N95 Respirators in a Health Care Setting: Supplemental Information

Key Messages

This supplemental information was generated to support decision-making and to provide information on N95 equivalents from other countries during the novel coronavirus disease (COVID-19) pandemic.

We examined the recommendations from national and international health authorities and organizations and completed a targeted search of published literature. We found the following:

- No research studies were identified that compared the equivalence of N95 respirators from international jurisdictions to those used in health care settings in Canada and the United States (National Institute for Occupational Safety and Health [NIOSH] certified). The US Food and Drug Administration (FDA) issued an Emergency Use Authorization (EUA) for importing non-NIOSH–approved N95 respirators from Australia, Brazil, Europe, Japan, Korea, and Mexico, which have similar standards to NIOSH. The FDA also issued a new EUA for non-NIOSH–approved N95 respirators made in China, which makes KN95 respirators eligible for authorization if certain criteria are met, including evidence demonstrating that the respirator is authentic.

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Background and Context

On April 7, Ontario Health (Quality) received a request from the Ontario Health Secretariat for information around N95 equivalents from other countries during the COVID-19 pandemic. In response to that request, this supplementary information provides a summary of the evidence from Ontario Health's rapid evidence summary (March 31) and from a targeted search for published scientific literature and guidance.

Guidance and Peer-Reviewed Studies

Filtering facepiece respirators (FFR) are subject to various regulatory standards around the world (3M, 2020[1]). These standards specify certain required physical properties and performance characteristics in order for respirators to claim compliance with the particular standard. During pandemic or emergency situations, health authorities often reference these standards when making respirator recommendations, stating, for example, that certain populations should use an "N95, FFP2, or equivalent" respirator (3M, 2020[2]).

The U.S. National Institute for Occupational Safety and Health (NIOSH) evaluates, tests and certifies N95 respirators (Health Canada, 2020[3]). The masks must pass minimum performance requirements, such as filter efficiency and breathing resistance. All N95 respirators certified by NIOSH must have an approval number stamped on the mask, represented as TC-84A-####n (Health Canada, 2020[4]).

Research Studies

No peer-reviewed, published studies were identified that compared the equivalence of N95 respirators from international jurisdictions to those used in health care settings in Canada/US (NIOSH certified).

Guidance

Health Canada

Health Canada, the regulator for medical devices in Canada, lists N95 respirators (or particulate filtering face-piece respirators) as Class I medical devices and are manufactured by companies that hold a Medical Device Establishment Licence (MDEL) (Health Canada, 2020[5]).

Health Canada accepts the NIOSH certification as an appropriate quality standard for N95 masks used by health care providers (Health Canada, 2020[6]). Equivalent alternate standards are also acceptable (although Health Canada does not specify these standards on the website). Health Canada is fast-tracking the MDEL application process for companies that want to manufacture, import or distribute Class I masks. The goal is to complete the process within 24 hours from the time Health Canada receives a completed application (Health Canada, 2020[7]).

United States

On March 28, 2020, the US Food and Drug Administration (FDA) issued an Emergency Use Authorization (EUA) for importing non-NIOSH-approved N95 respirators (US FDA, 2020[8]). Under this EUA, among other criteria, the FDA accepts marketing authorization from Australia, Brazil, Europe, Japan, Korea and

Table 2: Respirator-Cartridge Units Approved Under Standards Used in Other Countries That Are Similar to NIOSH-Approved Elastomeric Half-Facepiece Respirators (Centers for Disease Control and Prevention, 2020[14])

Country	Performance Standard	Acceptable Product Classification	May Be Used in Lieu of NIOSH-Certified Products Classified as
Australia	AS/NZS 1716:2012	P2	N95
		P3	N99 or lower
Brazil	ABNT/NBR 13694:1996; ABNT/NBR 13697:1996	P2	N95
		P3	N99 or lower
People's Republic of China	GB 2626-2006; GB 2626-2019	KN/KP95	N95
		KN/KP100	N95
Europe	EN140-1999; EN 143-2000	P2	N95
		P3	N99 or lower
Japan	JMHLW-2000	RS/RL2	N95
		RS/RL3	N99 or lower
Korea	KMOEL-2014-46	Special 1st	N95
Mexico	NOM-116-2009	N95	N95
		R95	R95 or lower
		P95	P95 or lower
		N99	N99 or lower
		R99	R99 or lower
		P99	P99 or lower
		N100	N100 or lower
		R100	R100 or lower
		P100	P100 or lower

Recalls of International Respirators

There have been recent recalls of imported respirators in various countries including the Netherlands, Spain and Turkey (NOS, 2020[15]).

In the Netherlands, KN95 respirators were imported (with Chinese KN95 quality certificate) and distributed to hospitals. The respirators were initially rejected due to poor fit. Additionally, Dutch hospitals quantitatively tested the imported KN95 respirators on their own initiative and determined the masks were of substandard filtration quality (Inspector General for Healthcare and Youth, 2020[16]). The 600,000 KN95 respirators were subsequently recalled by the Dutch Ministry of Health, Welfare and Sport (Inspector General for Healthcare and Youth, 2020[17]).

When NIOSH becomes aware of counterfeit respirators or those misrepresenting NIOSH approval on the market, the Centers for Disease Control and Prevention posts them on their website to alert users, purchasers, and manufacturers (Centers for Disease Control and Prevention, 2020[18]).

May 10, 2020 Ontario Health guidelines to help optimize the PPE supply. It explains that only in the context of PPE shortages should extended use or expired N95s be considered.

Source: PDF the Ontario government removed from their website but is archived

Ontario
Health

Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic

Recommendations from Ontario Health

Release date: May 10, 2020

2. Recommendations for the Extended Use of Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the extended use of PPE should be considered in your contingency plans.

Recommendations for health care organizations

- Extend the use of existing PPE: Ensure that health care workers caring for cohorted patients with suspected or confirmed COVID-19 are following extended-use recommendations as appropriate for their setting

Table 4 (below) describes the strategy for extended use of PPE.

Extended use is applicable to N95 respirators (disposable), surgical/procedure masks (disposable), isolation gowns (disposable and cloth), and eye protection (disposable and reusable goggles and face shields).

Table 4. PPE conservation strategy of extended use

Strategy	Description
Extended use Applicable to the following types of PPE: • N95 respirators (disposable) • Surgical/procedure masks (disposable) • Isolation gowns (disposable and cloth) • Eye protection (disposable and reusable)	• We recommend that PPE is used over an extended period of time and over the course of many patients, in settings where it is feasible (e.g., while caring for a cohort of patients with suspected or confirmed COVID-19 in an inpatient setting) • Extended use of PPE, including N95 respirators, is **not** recommended after performing an AGMP ○ After performing an AGMP for a patient with suspected or confirmed COVID-19, PPE items should be safely removed ("doffed"). Disposable items that cannot be reprocessed should be discarded (e.g., gloves), reusable items cleaned/disinfected (e.g., cloth gowns), and N95 respirators placed in the appropriate receptacles for reprocessing • Consider the following key principles: ○ Cohort patients with suspected or confirmed COVID-19, assign designated teams of health care providers, and batch your patient encounters to help conserve the use of PPE ○ Extend the use of PPE for as long as possible, but once wet, damaged, soiled, or removed (e.g., to eat or drink), or after exiting the patient care area, PPE should be changed ○ Take extra care when removing the PPE as this is when self-contamination may occur. Disposable items that cannot be reprocessed should be discarded (e.g., gloves), reusable items

3. The use Recommendations for the Use of Expired Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the use of PPE that is expired/beyond the manufacturer-designated shelf life should be considered in your **crisis plans**.

Recommendations for health care organizations

- Take stock of and inspect any expired N95 respirators (disposable)[8] and any other expired PPE
    - Expired N95 respirators (disposable) and other PPE items that have been stored in accordance with manufacturers' storage conditions require inspection to ensure they are not damaged, and may be used when regular supplies are depleted

Table 5 describes the use of expired N95 respirators (disposable) and other types of expired PPE that may be used beyond the manufacturer-designated shelf life.

Table 5. Recommendations for expired PPE

Type of PPE	Description
N95 respirators[8,29-31]	• When supplies of N95 respirators are low or depleted, we recommend using expired N95 respirators from existing stockpiles • Inspect these N95 respirators to ensure they are not damaged and have been stored in accordance with manufacturers' storage conditions. Inspection should occur before distributing expired stock • Disclose to health care worker(s) that the N95 respirator(s) are expired and have been inspected before distribution • Before wearing an expired N95 respirator, a health care worker should: ○ Inspect for visible damage or soiling ○ Check that the straps, nose bridge, and nose foam are intact, and that the straps remain elastic ○ Perform a user-seal check each time they put on a respirator to check that it was donned correctly and that a tight seal is formed on their face • There is no specific timeframe for N95 respirators, beyond the expiry dates, at which they would no longer be considered suitable for use *Sources of additional information: 3M Technical Bulletin Respirators Beyond Their Shelf Life Considerations,[8] Health Canada,[32] Centers for Disease Control and Prevention,[33] ECRI Clinical Evidence Assessment,[34] Appendix F.*
Isolation gowns	• The majority of isolation gowns do not have a manufacturer-designated shelf life • In the situation where supplies are depleted, isolation gowns that do have a manufacturer-designated shelf life and are past their expiry date can be

4. Recommendations for the Limited Reuse of Personal Protective Equipment (PPE)

In the context of depleted supplies of PPE during a pandemic, the limited reuse of PPE should be considered in your **crisis plans**.

Recommendations for health care organizations
• Ensure that health care workers are following limited-reuse recommendations as appropriate for their setting

Table 6 (below) describes the strategy of limited reuse.

Limited reuse is applicable to N95 respirators (disposable), surgical/procedure masks (disposable), cloth isolation gowns, and eye protection (disposable and reusable goggles and face shields).

Table 6. Conservation strategy for PPE

Strategy	**Description**
Limited reuse Applicable to the following types of PPE: • N95 respirators (disposable) • Surgical/procedure masks (disposable) • Cloth isolation gowns • Eye protection (disposable and reusable)	• *Limited reuse* refers to the practice of using the same PPE item for multiple encounters with patients, but carefully removing it ("doffing") after each encounter, storing it safely, then putting it back on ("donning") without disinfecting • Limited reuse of PPE carries a higher risk of self-contamination than with extended use.[34] The feasibility of limited reuse may depend on the health care setting. For example, it is not recommended in critical care settings or for aerosol generating medical procedures (AGMP). They are better used in settings like assessment centres, etc. • Limited reuse of PPE, including N95 respirators, is **not** recommended for when performing an AGMP ○ After performing an AGMP for a patient with suspected or confirmed COVID-19, PPE items should be safely removed ("doffed"). Disposable items that cannot be reprocessed should be discarded (e.g., gloves), reusable items cleaned/disinfected (e.g., cloth gowns), and N95 respirators placed in the appropriate receptacles for reprocessing • Consider the following key principles: ○ The PPE is safely stored between patient encounters and put back on again ("donned") before the next encounter with a patient ○ Take great care when removing or redonning the PPE as this is when self-contamination may occur. Also take care to avoid contaminating the inside of the mask

6. Recommendations for Decontamination of Personal Protective Equipment (PPE) using Validated Sterilization and Disinfection Methods

In the context of depleted supplies of PPE during a pandemic, using validated sterilization and disinfection methods to decontaminate PPE for future use should be considered in your crisis plans in settings where it can be safely done.

A notice from Health Canada, Important Regulatory Considerations for the Reprocessing of Single Use N95 Respirators during the COVID-19 Response,[40] describes the regulatory requirements for reprocessing by a third-party organization. We have been advised by Health Canada that this notice does not apply to on-site reprocessing and decontamination by hospitals. Health care organizations who are considering on-site reprocessing should review the principles included to ensure the safety of their chosen sterilization and decontamination method:

- A validated process for disinfection/reprocessing
- Testing for the validation of bioburden reduction/disinfection
- Ensuring a chain of custody and safeguards to prevent inadvertent exposure
- Testing for performance characteristics and fit-testing

As stated by Health Canada,[41] the "reprocessing of devices intended for single use only is not a new concept. It has been done successfully with other devices used in Canada and similar technology can be applied to N95 respirators. To do this, Health Canada has invited applications from medical device companies with extensive experience manufacturing the equipment used in reprocessing in order to authorize these technologies to safely and effectively reprocess N95 respirators."

Recommendations for health care organizations

- Collect and store used N95 respirators (disposable) for decontamination using validated sterilization and disinfection methods:
    - Where feasible, all health care organizations should begin collecting used N95 respirators (disposable) that are not visibly soiled or damaged so that they may be reprocessed for future use using appropriate sterilization and decontamination methods
    - Used N95 respirators (disposable) that are unsoiled and undamaged should be collected and stored in disposal receptacles that are clearly labelled, dated, and separated from other types of PPE (e.g., in a biohazard bag, paper bag, or box)
    - Ensure inspection of respirators before reprocessing to confirm the condition of the N95 respirators are suitable for reprocessing if they have been stored for a length of time
    - Consider the feasibility of individual tracking versus universal pooled supply, as both are safe approaches. In either case, users will continue to wear the same type of N95 respirator that they are fit-tested for and appropriate fit is further confirmed through a careful user-seal check at the point of care
    - If a validated process for reprocessing is feasible at your health care organization, move forward with developing an implementation plan

Table 7 describes the recommendations for evidence-based strategies for reprocessing PPE, namely N95 respirators (disposable) and eye protection (goggles and face shields).

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September 22, 2020 Ontario Health guidelines to help optimize the PPE supply. It explains how elastomeric respirators should be used if hospitals are experiencing N95 shortages and that the exhalation valve can be covered so that they offer source control to protect those around the wearer.

Source: PDF the Ontario government removed from their website but is archived

Ontario
Health

Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic

Recommendations from Ontario Health

Release date: September 22, 2020

Version History

Release Date	Source	Change(s)
April 11, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	• Initial release
May 10, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	• Additional information included about isolation gowns • Clarified the recommendation for extended use and limited reuse of PPE, including N95 respirators, after aerosol-generating medical procedures (AGMPs) • Clarified the need for individual tracking of N95 respirators and/or universal pooled supply when reprocessing • Removed the recommendation to collect and store surgical/procedural masks for future reprocessing • Updated guidance information for reprocessing N95 respirators from Health Canada and implementation considerations from the Toronto Region COVID-19 Hospital Operations Table • Updated glossary of terms, adding information to definitions for gowns and masks • Updated the summary table (in the appendices) to reflect changes from the body of the document • Updated reference list
August 11, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	• Added reference to Directive #5 • Added information about respirators with exhalation valves • Updated information on expired PPE • Added a link to Health Canada notice for KN95 respirators • Updated section on expired N95 respirators and limited reuse of N95 respirators • Updated section on decontaminating N95 respirators and linked to Health Canada • Additional information provided on reprocessing eye protection • Updated reference list
September 22, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	• Edited information on reusable PPE options (elastomeric respirators) and other sources of PPE with exhalation valves

Recommendations for Health Care Organizations

In conjunction with obligations outlined in Directive #5 and other requirements to ensure the health and safety of workers and patients, consider the following conservation strategies to extend the supply of PPE and to ensure the long-term sustainability of PPE during the COVID-19 pandemic. This page provides an overview of the key items (more information is provided in their respective sections).

- **To help extend the supply of PPE, switch to reusable PPE options wherever they can be safely implemented:**
    - We support efforts to initiate acquisition of reusable PPE options, including cloth isolation gowns, as a sustainable contingency approach
    - Collaborate with your organization's occupational health and safety, IPAC, and infectious disease specialists to develop appropriate protocols for the use of reusable elastomeric respirators, which are a reusable equivalent to the more commonly known disposable N95 respirator. Organizations without these key specialist groups should consider consulting with experts from their region
    - Consider the use of powered air purifying respirators (PAPRs) in certain situations where health care workers will be wearing protective equipment for prolonged periods of time and where appropriate training can be provided (e.g., in the intensive care unit)
    - Establish procedures for fit-testing (where required) and cleaning/disinfecting, and provide education and training resources for health care workers on safe use of reusable PPE options
    - If an employee presents with their own reusable respirator, occupational health and safety units need to be engaged in order to support safe usage

- **Use certified PPE from other medical and non-medical settings:** Obtain and use certified PPE products from other medical settings that no longer need them and certified products from commercial, non-medical settings (e.g., industry-related settings). This includes disposable and reusable N95 respirators and other types of U.S. National Institute of Occupational Safety and Health (NIOSH) certifications that provide protection from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), including the following: N99, N100, R95, R99, R100, P95, P99, P100

- **Use 3D-printed face shields for eye protection, if needed:** 3D-printed face shields are an appropriate alternative to traditional face shields for eye protection. Ensure they meet the standards[9] set out by Health Canada

- **Extend the use of existing PPE:** Ensure that health care workers caring for cohorted patients with suspected or confirmed COVID-19 are following extended-use recommendations as appropriate for their setting

- **Use of expired products:** Take stock of, and inspect, any expired N95 respirators (disposable)[10] and any other expired PPE
    - Expired N95 respirators (disposable) and other PPE items that have been stored in accordance with manufacturers' storage conditions require inspection and testing to ensure they are not damaged, and may be used when regular supplies are depleted

- **Limited reuse:** Ensure that health care workers are following limited-reuse recommendations as appropriate for their setting

1.1 Use Reusable PPE Options

As described in Table 1 (below), the following PPE are reusable: elastomeric respirators, cloth isolation gowns, reusable eye protection (goggles and face shields), and PAPRs.

Reusable refers to the ability for a product to be used repeatedly, with validated methods for cleaning and/or disinfection between uses.

Table 1. Types of PPE with reusable options

Type of PPE	Description
N95 respirator equivalent: **reusable elastomeric respirators (half-mask and full facepiece)**	• Consider using NIOSH-approved, reusable elastomeric respirators when disposable N95 respirator supply is low (or during periods when N95 respirators are being conserved). If fit-tested and properly cleaned and disinfected between uses, reusable elastomeric respirators (half-mask or full facepiece) are as effective as disposable N95 respirators. Consider covering the respirator's exhalation valve with a surgical/procedure mask when source control may be required (e.g., in a sterile field)[11,12] • Reusable elastomeric respirators differ from disposable N95 respirators in that some users may experience issues with comfort/bulkiness, and interference with communication, and some people may feel claustrophobia or anxiety • Use of this type of reusable respirator needs the support from local administrative/occupation health and safety teams to ensure fit-testing and to support standardized cleaning protocols. If an employee presents with their own respirator, occupational health and safety units need to be engaged to support safe usage (e.g., declaration of its use, ensuring fit-testing, establishing a cleaning protocol) • The ideal way to disinfect these respirators is to submerge them in water and bleach. However, the use of water and bleach is not practical between patients. As an interim option, the exterior surface can be cleaned using organization-approved disinfectant wipes (alcohol, quaternary ammonia, hydrogen peroxide, or bleach).[13] Refer to the manufacturer's instructions on cleaning and disinfection • Pay special attention to the appropriate handling and reuse of potentially contaminated detachable filters. Some detachable filters have exposed fibres that present a self-contamination hazard; this type of filter is not recommended unless it can be safely discarded. Do not get the cartridges and filters wet. The attached filtering cartridges are replaceable and can be changed. Currently, these filters cannot be reprocessed *Sources of additional information:* 3M Cleaning and Disinfecting Technical Bulletin,[14] 3M Replacement and Cleaning Training Video,[15] Standard Operating Procedure for Disinfection,[16] 3M Filtering Facepiece Respirators

February 25, 2021 Ontario Health guidelines to help optimize the PPE supply. It explains how healthcare workers are to wear surgical masks around patients that have confirmed Covid infections plus repeats how elastomeric respirators should be used as N95s alternatives and how to cover the valve if source control is needed.

Source: https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

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Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic

Recommendations from Ontario Health

Release date: February 25, 2021

Version History

Release Date	Source	Change(s)
April 11, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	- Initial release
May 10, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	- Additional information included about isolation gowns - Clarified the recommendation for extended use and limited reuse of PPE, including N95 respirators, after aerosol-generating medical procedures (AGMPs) - Clarified the need for individual tracking of N95 respirators and/or universal pooled supply when reprocessing - Removed the recommendation to collect and store surgical/procedural masks for future reprocessing - Updated guidance information for reprocessing N95 respirators from Health Canada and implementation considerations from the Toronto Region COVID-19 Hospital Operations Table - Updated glossary of terms, adding information to definitions for gowns and masks - Updated the summary table (in the appendices) to reflect changes from the body of the document - Updated reference list
August 11, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	- Added reference to Directive #5 - Added information about respirators with exhalation valves - Updated information on expired PPE - Added a link to Health Canada notice for KN95 respirators - Updated section on expired N95 respirators and limited reuse of N95 respirators - Updated section on decontaminating N95 respirators and linked to Health Canada - Additional information provided on reprocessing eye protection - Updated reference list
September 22, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	- Edited information on reusable PPE options (elastomeric respirators) and other sources of PPE with exhalation valves
December 21, 2020	COVID-19 Response: Personal Protective Equipment (PPE) Committee	- Added definition for "health care worker" - Created "Background" section. Added content on mode of virus transmission and universal masking for source control into background section

		• Removed the recommendation about the use of 3D printed face shields • Added detail to reusable PPE options section for elastomeric respirators and powered air purifying respirators • Added detail on extended use for gowns • Updated recommendations for N95 reprocessing to reflect current provincial approach • Updated the reference list and the links embedded in the document
February 25, 2021	COVID-19 Response: Personal Protective Equipment (PPE) Committee	• Added a reminder on the process for ordering supply of PPE • Added comment on the COVID-19 variants of concern • Added information to the reusable elastomeric respirators section • Revised the description of patient cohort in the extended use section • Revised the recommendation for the extended use of gowns • Clarified the description of recommendations about layering PPE • Clarified when expired supplies would be considered for use

Wearing a mask is not a substitute for physical distancing, hand washing, or other infection prevention and control measures[11]

When caring for patients/residents with suspected or confirmed COVID-19:

- Droplet/contact precautions (surgical/procedure mask, isolation gown, gloves, and eye protection) are used for all interactions[3,5,10]
- In addition to droplet/contact precautions, airborne precautions (N95 respirator, isolation gown, gloves, and eye protection) are used when aerosol-generating medical procedures (AGMPs) are planned or anticipated for patients with suspected or confirmed COVID-19[3,5,10]

1.1 Use Reusable PPE Options

As described in Table 1 (below), the following PPE are reusable: elastomeric respirators, reusable isolation gowns, reusable eye protection (goggles and face shields), and PAPRs.

Reusable refers to the ability for a product to be used repeatedly, with validated methods for cleaning and/or disinfection between uses.

Table 1. Types of PPE with reusable options

Type of PPE	Description
N95 respirator equivalent: **reusable elastomeric respirators (half-mask and full facepiece)**	• Consider using NIOSH-approved, reusable elastomeric respirators when the supply of disposable N95 respirators is low. If fit-tested and properly cleaned and disinfected between uses, reusable elastomeric respirators (half-mask or full facepiece) are as effective as disposable N95 respirators • If the elastomeric respirator has an exhalation valve: o Consider covering the respirator's exhalation valve for source control. To cover the exhalation valve, consider using a surgical/procedure mask or a cloth mask that does not interfere with the fit of the respirator.[17-20] Covering the exhalation valve is a recommendation to prevent the user from spreading droplets through the valve, and may deviate from the manufacturer's user guide o Elastomeric respirators with exhalation valves should not be used when a sterile field is required • Reusable elastomeric respirators differ from disposable N95 respirators in that some users may experience issues with comfort/bulkiness, and interference with communication, and some people may feel claustrophobia or anxiety • Use of this type of reusable respirator needs the support from local administrative/occupational health and safety teams to ensure fit-testing and to support standardized cleaning protocols and a standardized filter changing schedule. If an employee presents with their own respirator, occupational health and safety units need to be engaged to support safe usage (e.g., declaration of its use, ensuring fit-testing, establishing a cleaning and disinfection protocol, training staff to inspect, don and doff the respirator and to perform a user seal check) • Refer to the manufacturer's instructions on cleaning and disinfection. Cleaning and disinfection are recommended after each use. The ideal way to disinfect these respirators (components include facepiece, valves and straps) is to submerge them in warm water and a compatible detergent (e.g., sodium hypochlorite solution, 70% isopropanol solution). However, the use of water and detergent may not be practical between

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January 4, 2021 Manitoba government Shared Health Covid-19 guidance on using elastomeric respirators in healthcare settings. It explains how to safely use elastomeric respirators and how to cover the valve if additional source control is needed.

Source: https://sharedhealthmb.ca/files/covid-19-reuse-of-elastomeric-respirators.pdf

Shared health Soins communs Manitoba

Manitoba

COVID-19
Guidance on the Reuse of Elastomeric (Half Mask) Respirators

This guidance is adapted for use in Manitoba from materials developed by McGill University Health Centre.

CONTEXT

Reusable respirators (specifically, reusable half-facepiece elastomeric respirators) are the standard respiratory protection device used in many industries and in certain healthcare settings and facilities.

The durability and reusability of elastomeric respirators make them desirable for stockpiling for emergencies, where the need for large volumes of respirators can be anticipated.

MATERIAL

Elastomeric Half-Facepiece Respirators (EHFR) (see annex 1 to compare with other masks/respirators) are half-face, tight-fitting respirators made of synthetic or rubber material. These materials permit them to be repeatedly disinfected, cleaned, and reused.

PROCEDURES

Prior to first use all healthcare workers must be fit tested by Occupational Health and/or designate.

FILTER ASSEMBLY INSTRUCTIONS
1. **Align** opening of cartridge/filter with filter attachment on facepiece. The alignment mark on the cartridge/filter should face the front of the facepiece.
2. **Turn** cartridge/filter **clockwise** one quarter until it is firmly seated and cannot be further turned.
3. Repeat for second filter.

DONNING THE HALF-MASK (STANDARD SUSPENSION)
1. Perform hand hygiene.
2. Inspect the respirator to ensure it is in proper operating condition (not cracked, damaged, flaps are not torn or missing, straps not damaged, etc.).

3. Replace any damaged or defectives parts before use.

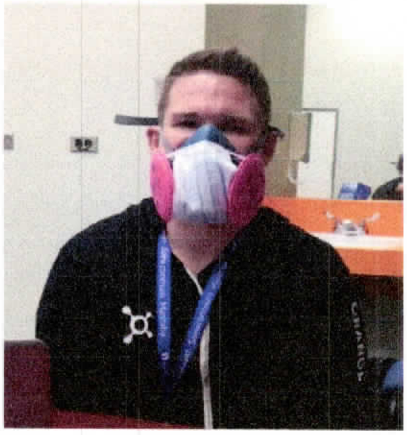
4. Adjust head cradle size as needed to fit comfortably on head.

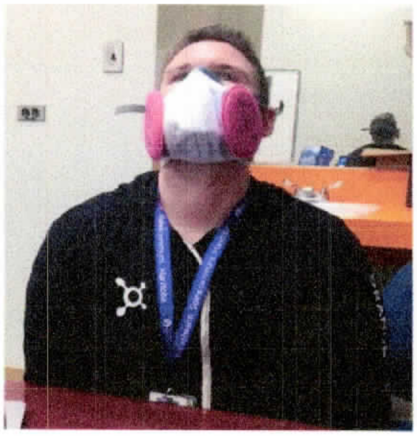
5. Place the respirator over the mouth and nose, then pull the head harness over the crown of the head. Grasp the bottom straps, place them at the back of the neck and hook them together.

6. Pull the ends of the straps to adjust the tightness. Do not over-tighten.

7. Perform a positive and negative pressure user seal check each time respirator is donned. If you cannot achieve a proper seal, **DO NOT** enter contaminated area. See your supervisor.
    a. Positive Pressure Seal Check
        i. Cover the opening in exhalation valve cover with hand and **exhale gently**. If facepiece bulges slightly and no air leaks are detected between your face and facepiece, a proper seal has been obtained.
        ii. If faceseal air leakage is detected, reposition respirator on your face and/or readjust tension of the elastic straps to eliminate leakage.
    b. Negative Pressure Seal Check
        i. Using hands, press or squeeze cartridge/filter covers toward facepiece to restrict airflow and inhale gently. Be careful not to disturb the position of the respirator. If you feel the facepiece collapse slightly and pull closer to your face with no leaks between your face and the facepiece, a proper seal has been obtained.
        ii. If faceseal air leakage is detected, reposition respirator on face and/or readjust tension of straps to eliminate the leakage.

8. Place a *surgical* mask overtop of the respirator (in a vertical position between the cartridges) to cover the exhalation valve.





9. If you experience any discomfort at any time, doff the mask after exiting the potential aerosolization room.
10. If filters become damaged, soiled or breathing becomes difficult, leave the contaminated area immediately and replace the filters.
11. Continue donning PPE as required for surgical procedure

DOFFING AND CLEANING PROCESS OF THE HALF-MASK

*******Doff respirator in the designated clean station******

1. Perform hand hygiene and don clean gloves.
2. **When doffing**, first remove procedure or surgical mask. Carefully remove the respirator by grabbing the bottom straps and undo the attachment; avoid touching the inside of the respirator. Hold onto the bottom elastic straps with one hand keeping a tension. Grab the top strap from the back of the head and pull it away from your face.
3. Leave the filters attached to the respirator.
4. Place the face piece in the designated container to be taken to MDR.
5. Discard gloves and perform hand hygiene.

Transport of Elastomeric Half Masks to Medical Device Reprocessing (MDR)

Cleaning and disinfection of the elastomeric half respirators and cartridges will be centralized in Medical Device Reprocessing (MDR), following the written Standard Operating Procedures (SOP) for cleaning and disinfecting these devices. Refer to the appropriate SOP in MDR.

REFERENCES

IRRST documents for cleaning : https://www.irsst.qc.ca/covid-19/avis-irsst/id/2632/desinfection-des-appareils-de-protection-respiratoire-apr-en-elastomere-reutilisables

3M document on cleaning and disinfecting: Cleaning_Disinfecting_RR_Coronavirus_v4

ECRI document also a base document for evidence to support use: COVID-ECRI-N95-Respirators_2020-03

CDC poster describing differences / use of respirators: UnderstandingDifference3-508

OSHA/NIOSH/CDC document on respirators which includes elastomerics: OSHA3767 Literature on feasibility from Journal of Infection Control: PIIS0196655315000899

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Understanding the Difference

	Surgical Mask	**N95 Respirator**	**Elastomeric Half Facepiece Respirator**
Testing and Approval	Cleared by the U.S. Food and Drug Administration (**FDA**)	Evaluated, tested, and approved by **NIOSH** as per the requirements in 42 CFR Part 84*	Evaluated, tested, and approved by **NIOSH** as per the requirements in 42 CFR Part 84
Intended Use and Purpose	Fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids. Protects the patient from the wearer's respiratory emissions.	Reduces wearer's exposure to particles including small particle aerosols and large droplets (**only non-oil aerosols**)	Reusable device made of synthetic or rubber material
Face Seal Fit	Loose-fitting	Tight-fitting	Tight-fitting
Fit Testing Requirement	No	Yes	Yes
Designed for Reuse	No	No	Yes
User Seal Check	No	Yes. Required each time the respirator is donned (put on)	Yes. Required each time the respirator is donned (put on)
Filtration	Does **NOT** provide the wearer with a reliable level of protection from inhaling smaller airborne particles and is not considered respiratory protection	Filters out at least 95% of airborne particles including large and small particles	May be equipped with filters that block 95%, 99%, or 100% of very small particulates. Also may be equipped to protect against vapors/gases.
Leakage	Leakage occurs around the edge of the mask when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales	When properly fitted and donned, minimal leakage occurs around edges of the respirator when user inhales
Use Limitations	Disposable. Discard after each patient encounter.	Ideally should be discarded after each patient encounter and after aerosol-generating procedures. It should also be discarded when it becomes damaged or deformed; no longer forms an effective seal to the face; becomes wet or visibly dirty; breathing becomes difficult; or if it becomes contaminated with blood, respiratory or nasal secretions, or other bodily fluids.	Reusable and must be cleaned/ disinfected and stored between each patient interaction

*As of July 2, 2018, NIOSH evaluates N95 FFRs intended for use in healthcare for biocompatibility, flammability, and fluid resistance to ensure conformity to relevant standards during the approval process. These tasks were previously performed by the FDA.

CDC NIOSH
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

Resources:
Hospital Respiratory Protection Program Toolkit
https://www.cdc.gov/niosh/docs/2015-117/pdfs/2015-117.pdf
Implementing Hospital Respiratory Protection Programs: Strategies from the Field
https://www.jointcommission.org/assets/1/18/Implementing_Hospital_RPP_2-19-15.pdf

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British Columbia Centre for Disease Control and BC Ministry of Health guidance on elastomeric respirators for source control in healthcare settings. This guideline explains how surgical masks are insufficient to properly protect healthcare workers from droplet transmission since droplets can get through the gaps and that healthcare workers should use tight fitting respirators like elastomeric respirators to ensure the best protection possible. It explains how there aren't any studies to prove exhalation valves pose a danger for those around the wearer but that healthcare workers can cover the valve if additional source control is wanted.

Source: http://www.bccdc.ca/Health-Professionals-Site/Documents/COVID-19-PPE/EHFR_GuidanceSourceControl.pdf

COVID-19 Interim Guidance: Elastomeric Half Face Respirator Source Control in Pre-Hospital and Health-Care Settings

June 9, 2021

Situation

Reusable elastomeric half-face respirators (EHFR) have been used primarily in hospital and pre-hospital health-care settings (such as emergency health services) and may be considered in other community-based settings during the COVID-19 pandemic. EHFRs are used as an alternative when N95 respirator supply is limited or a health-care provider is unable to be successfully fitted to available N95 respirator models and sizes. Respirators with exhalation valves protect the wearer from SARS-CoV-2 but may not prevent the wearer from spreading the virus to others. The concern is whether the use of EHFR with unfiltered exhalation valves worn by asymptomatic staff members may expose co-workers or patients to infectious agents including SARS-CoV-2 and variant strains.

The Ministry of Health's Mask Use in Health-Care Facilities during the COVID-19 Pandemic Policy requires all health-care workers (HCWs[1]) to wear a medical grade mask (surgical or procedure) to contain droplets from the mouth and nose as a method of infection prevention and control (IPC). It is important to note that medical grade masks are not designed to fit tightly to the face and have gaps normally along the sides. When the wearer breathes in and out, air could potentially leak through those gaps, and may include respiratory droplets and aerosols. Therefore, it is important to implement all mitigation strategies on the hierarchy of IPC to prevent the spread of respiratory pathogens (e.g., physical distancing wherever possible, screening, ventilation, environmental cleaning, hand hygiene, etc.).

For respirators with exhalation valves, the direction of the exhaled airflow will vary depending on the design (for example, downward/forward for EHFR with exhalation valves). The exhaled unfiltered air poses a risk of environmental contamination and clean/sterile field contamination.

Any changes in EHFR use within health-care settings during the pandemic should reflect other control measures in place such as appropriate ventilation, COVID-19 screening, physical distancing, hand hygiene and the use of medical masks.

Recommendations

The following recommendations aim to address potential concerns about EHFR with unfiltered exhalation valves. In the context of the pandemic the EHFR with exhalation valves continue to be part of the provincial personal protective equipment (PPE) strategy to extend the use of N95 respirators as well as provide an alternative for HCWs who cannot be fitted for an N95 respirator. The following recommendations align with current U.S. Centers for Disease Control and Prevention (CDC) recommendations. These recommendations will be revisited and amended in the future, as required:

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[1] HCWs includes paramedics.

1. EHFR with unfiltered exhalation valves should be covered, with a medical grade mask or other source control mechanism deemed acceptable by the National Institute for Occupational Safety and Health (NIOSH), during use. Medical grade masks should be applied to the EHFR in a way that does not interfere with the respirator seal, by attaching the ear loops around filter cartridges. Where a sterile field is required (e.g., operating room), an N95 respirator is the preferred option; however, if EHFR is the only option available, the exhalation valve must be covered. Users of EHFR are responsible for self-screening prior to each shift and must follow the reusable EFHR cleaning and disinfection protocols.

2. In non-patient care areas where HCWs use EHFRs to protect themselves from hazards other than infectious agents (e.g., dust/particulates, chemical handling or spill clean-ups), the exhalation valve does not have to be covered if other people in the area are wearing a respirator. Refer to site work procedures for additional task-specific PPE requirements (e.g., remove EHFR and wear surgical mask when transitioning to patient care areas).

Additional Notes

- N95 filtering face-piece respirators with an exhalation valve are not recommended in patient interactions in health authority facilities as they cannot be safely covered. Using a medical mask to cover N95 respirators with an exhalation valve can affect the seal and therefore is not acceptable.

  Consult with workplace health and safety for health authority specific guidance.

Literature Review Findings

There is a lack of published peer-reviewed literature on the effectiveness of respirators with exhalation valves (e.g., EHFR) in preventing the spread of SARS-CoV-2 from the wearer to others. A literature search review was performed on University of British Columbia's library databases online using a combination of keywords and PPE terms: "respirator with exhalation valve" OR "exhalation valves" AND "SARS-CoV-2" OR "COVID-19" OR "coronavirus 19."

There is limited scientific evidence to support or warn against covering unfiltered exhalation valves on EHFRs and the risk of SARS-CoV-2 transmission by pre-symptomatic or asymptomatic individuals through droplets expelled from EHFR exhalation valves in relation to patient and staff safety.

Current Precautionary Measures

HCW self-screening before each shift is in place in all health authority facilities. If a staff member becomes symptomatic during their shift, they are required to notify their supervisor/manager, leave the workplace, use the self-assessment tool and go for COVID-19 testing if required. Staff should self-isolate as recommended by public health.

All visitors, patients, staff and HCWs in B.C. health-care facilities and patient care areas are required to wear medical grade (procedure/surgical) masks at all times. In addition, HCWs are required to wear eye/facial protection (e.g., face shield, safety goggles) during patient interactions.

Discussion / Conclusion

Literature regarding the level of source control offered by EHFRs is extremely limited and there is a lack of evidence-based research at this time. Only Howard et al. (2020) have studied sterile field contamination of EHFRs, finding no difference compared to other masks.

Expanding the literature search to include N95 respirators with valves, the NIOSH technical report (2020) offers corroborating evidence, indicating that a valved respirator provides source control similar to surgical masks but less than an N95 respirator without an exhalation valve. Verma et al. (2020) and Staymates (2020), through their visualization methods, show that aerosols can be released from medical masks as well as through the exhalation valves and the direction of this release is impacted by the exhaust valves on the N95 respirator. However, the clinical implications are unknown.

BC Emergency Health Services has conducted a validation of practice (fit test) to determine if covering the exhalation valve with a procedure mask compromises the seal. Medical grade masks were applied to EHFR in a way not interfering with the respirator seal, by attaching ear loops around the filter cartridges. Quantitative fit testing (using a PortaCount) resulted in 100% pass (N = 42) and did not demonstrate a negative impact on the respirator seal/fit. (Average fit factor[2]: EHFR with exhalation valve = 4977; EHFR with exhalation valve covered with a medical grade mask = 4042; EHFR with exhalation valve covered with a pediatric medical grade mask = 4984)

The provincial mask use in health-care facilities policy requires all health-care workers, clients/patients and visitors to wear medical grade masks to contain liquid droplets from mouths and noses when they cough, sneeze, and/or talk. However, medical grade masks are not designed to seal tightly to the face, so some unfiltered air can escape through and around the edges (Verma et al., NIOSH Technical Report, and Howard et al). While some air can escape through and around the edges, medical masks still offer better protection from direct droplets from coughs or sneezes than other masks or no masks.

Research on exhalation valves on N95s has shown that droplets pass through the exhalation valve unfiltered in a more focused and directional manner. When wearing a face shield in conjunction with these respirators with exhaust valves, the combination may lower the droplet concentration in front of the HCW's face by blocking the forward motion of the jet and dispersing it over a wider area (to the side and downward back toward the user). Given that there is little evidence to support that the amount of infectious particulates released from these EHFRs is greater than that released through medical masks, there may be situations where a full face shield may be used with these EHFR. This practice could further minimize the potential droplets released from being exhaled directly towards other staff and/or patients who are in close proximity to the wearer. It could also alleviate the risk of potential medical mask impact on the respirator seal and/or potential physiological impact to the HCWs wearing the respiratory protection for extended periods of time and often at higher work rates (during emergency response, etc.).

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[2] A fit factor is a number that is the direct result of a quantitative respirator fit test. It is a measurement made by an instrument during a simulation of workplace activities (the exercises). It is expressed as the challenge aerosol concentration outside the respirator divided by the challenge aerosol concentration that leaks inside the respirator during a fit test.

The evidence regarding the risk of transmission from EHFR and whether an unfiltered exhaust valve needs to be covered is inconclusive at this time. According to the Public Health Agency of Canada (2021) and the World Health Organization (2020), use of respirators with exhaust valves are not recommended because the exhalation valve can allow virus particulates to pass through the exhalation valve opening. This makes the respirator ineffective at preventing the spread of SARS-CoV-2 or other respiratory viruses. Covering any unfiltered exhalation valve with a medical grade mask covering can be implemented to mitigate risk and is recommended by the U.S. (2020). However, respirator manufacturers do not endorse this practice.

Acknowledgements

This document was created by a sub-working group of the provincial PPE working group in consultation with the IPC/ Workplace health and safety COVID-19 task group.

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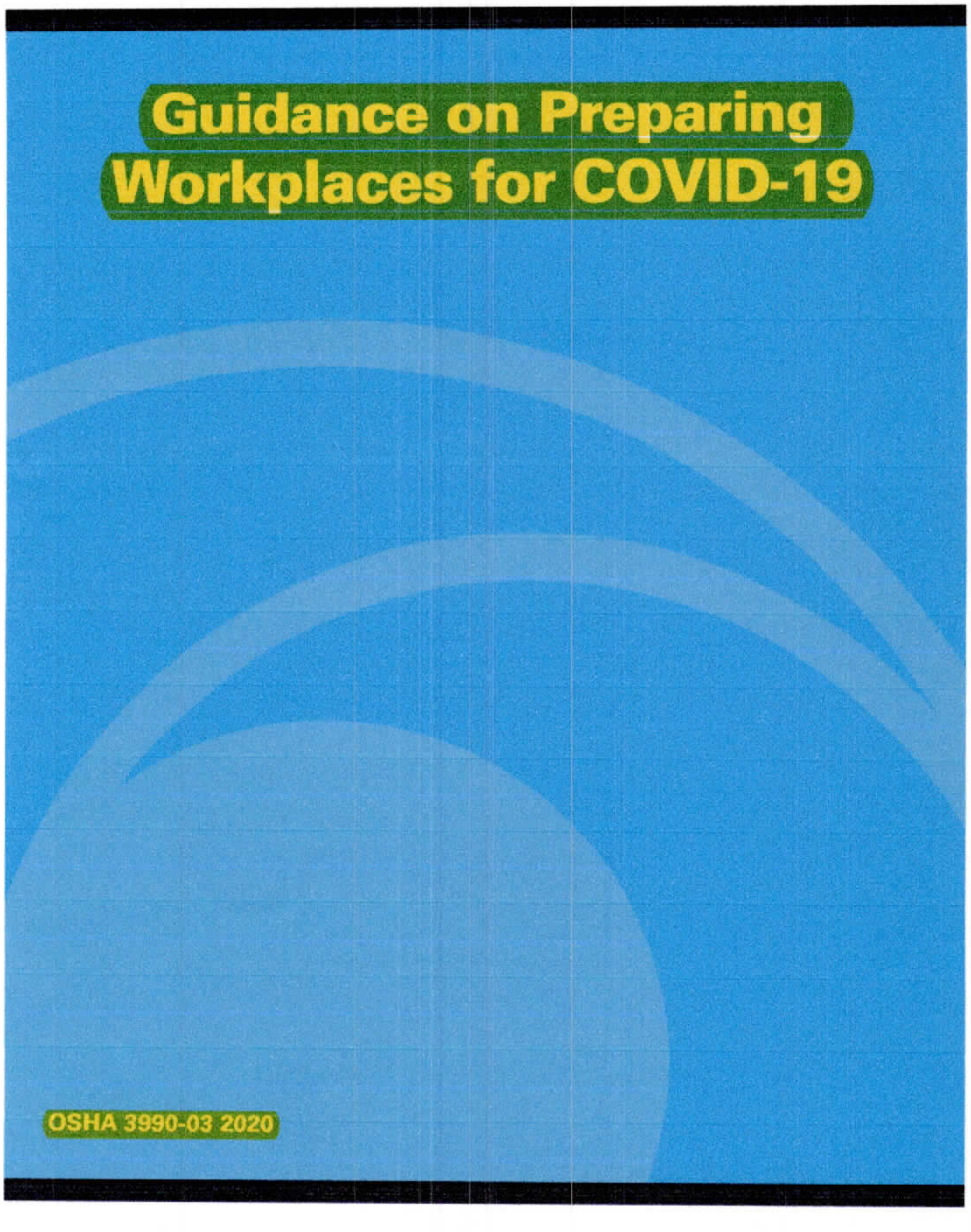
10

US Government OSHA workplace guidelines to help workplaces prepare for Covid-19 released in March 2020. It explains that if workplaces don't have enough N95s to consider using elastomeric respirators as they provide better protection and are more comfortable than N95s.

Source: https://www.osha.gov/sites/default/files/publications/OSHA3990.pdf

NOTICE: This is an OSHA Archive Document, and may no longer represent OSHA Policy. It is presented here as historical content, for research and review purposes only. For the most up-to-date information, consult Protecting Workers Guidance.



Guidance on Preparing Workplaces for COVID-19

OSHA 3990-03 2020

Guidance on Preparing Workplaces for COVID-19

U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3990-03 2020

U.S. Department of Labor

- Consistently and properly worn when required.
- Regularly inspected, maintained, and replaced, as necessary.
- Properly removed, cleaned, and stored or disposed of, as applicable, to avoid contamination of self, others, or the environment.

Employers are obligated to provide their workers with PPE needed to keep them safe while performing their jobs. The types of PPE required during a COVID-19 outbreak will be based on the risk of being infected with SARS-CoV-2 while working and job tasks that may lead to exposure.

Workers, including those who work within 6 feet of patients known to be, or suspected of being, infected with SARS-CoV-2 and those performing aerosol-generating procedures, need to use respirators:

- National Institute for Occupational Safety and Health (NIOSH)-approved, N95 filtering facepiece respirators or better must be used in the context of a comprehensive, written respiratory protection program that includes fit-testing, training, and medical exams. See OSHA's Respiratory Protection standard, 29 CFR 1910.134 at www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134.
- When disposable N95 filtering facepiece respirators are not available, consider using other respirators that provide greater protection and improve worker comfort. Other types of acceptable respirators include: a R/P95, N/R/P99, or N/R/P100 filtering facepiece respirator; an air-purifying elastomeric (e.g., half-face or full-face) respirator with appropriate filters or cartridges; powered air purifying respirator (PAPR) with high-efficiency particulate arrestance (HEPA) filter; or supplied air respirator (SAR). See CDC/NIOSH guidance for optimizing respirator supplies at: www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy.

Porcupine Health Unit Designated Officers Manual titled Reducing The Risk for Front-Line Staff issued in 2019. This manual was adapted from the Ontario Association of Designated Officers 2015 (revised 2019). This manual explains how workers can use elastomeric respirators for protection from both droplet as well as airborne transmission.

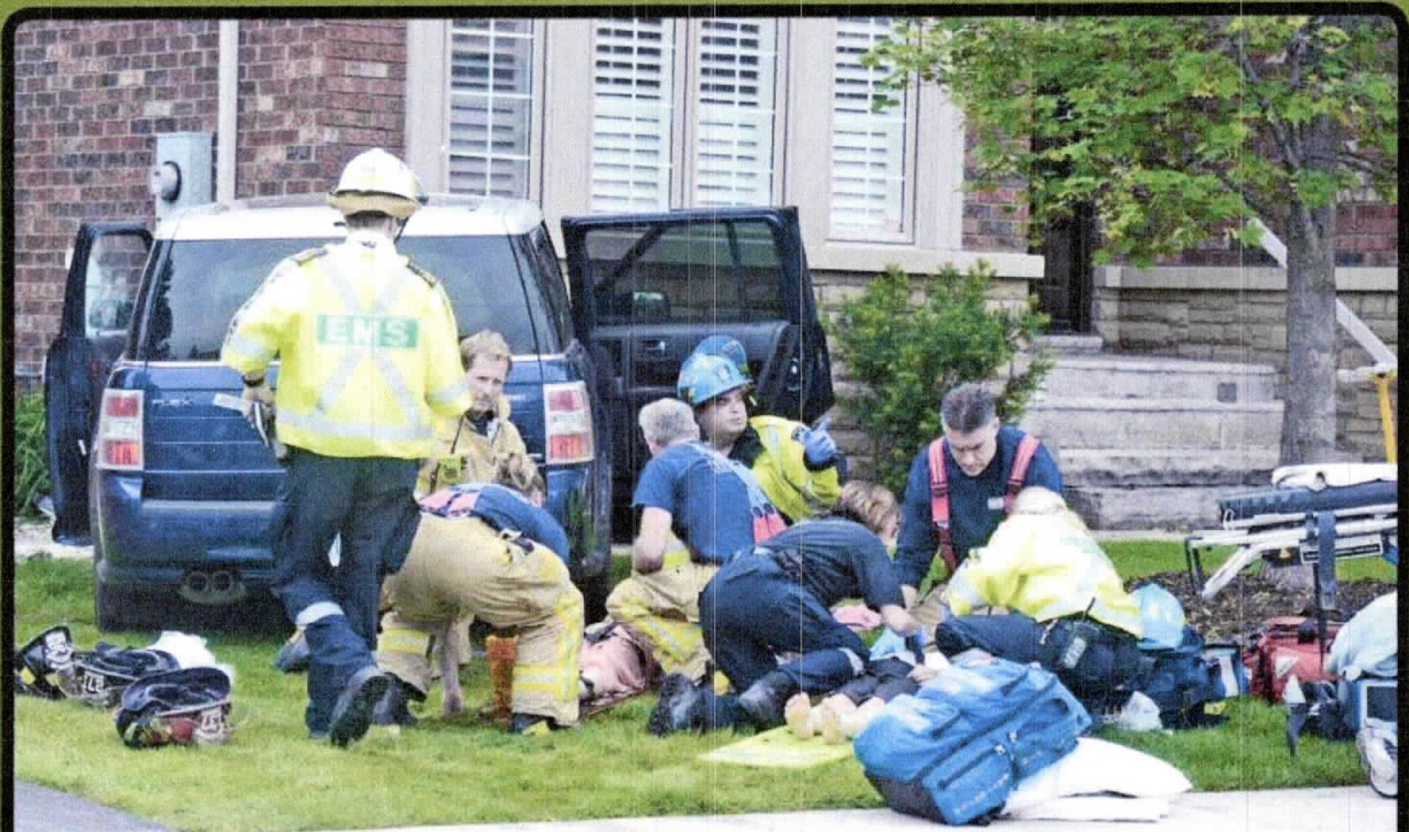
Source: https://www.porcupinehu.on.ca/en/audiences/designated-officers/do-manual.pdf

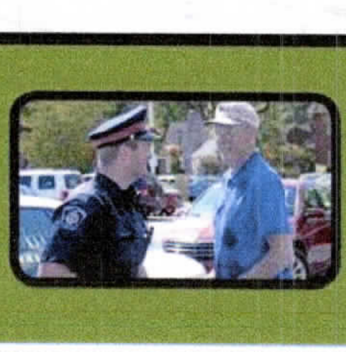
Porcupine Health Unit

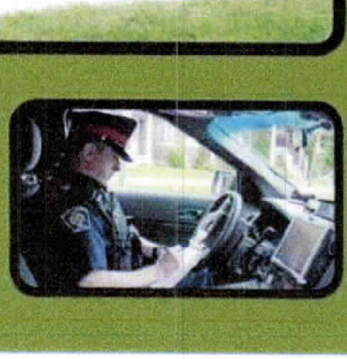
Designated Officers Manual For Infection Prevention

REDUCING THE RISK

FOR FRONT-LINE STAFF







ADAPTED BY THE PORCUPINE HEALTH UNIT FROM THE ONTARIO ASSOCIATION OF DESIGNATED OFFICERS 2015 (revised 2019)

Diseases spread through airborne transmission must be inhaled in order to cause infection. Tuberculosis must be inhaled in order to infect a new host. Both chickenpox and measles can also be spread through droplet transmission from direct contact with infected secretions from the upper respiratory tract.

PREVENTION OF AIRBORNE TRANSMISSION

- **Wearing of N95 or reusable (elastomeric) respirators.**
- **Having client cover their nose and mouth with their sleeve or tissue when coughing, sneezing or speaking.**
- **Having client wear a surgical mask (if available).**
- **Ensuring proper ventilation in buildings and vehicles of at least 9 to 12 air exchanges per hour.**

DROPLET TRANSMISSION

Droplet transmission refers to large droplets (greater than 5 microns) that are generated from the respiratory tract and aerosolized into the air when a person coughs or sneezes. Certain high-risk medical procedures, such as suctioning, and intubation will also cause the aerosolization of these large droplets and cause them to be expelled into the air (see section on high-risk procedures for more information). The heavy droplets can travel up to two metres away from the original infected host, allowing them to be inhaled directly into the lungs of another person. The droplets might also land on unprotected mucous membranes of the eyes, nose and mouth the person is within two metres of the infected client. The droplets can also land on objects in the immediate environment. If a worker touches those objects and then touches their hands to their face, they may transfer the infectious agent to vulnerable mucous membranes.

Diseases spread by the droplet route are easily identifiable by the client's visible symptoms. Acute Respiratory infections (ARI) and influenza-like illnesses (ILI), which include symptoms of fever and new or worsening cough, are spread through the expulsion of heavy respiratory secretions from the nose and mouth. However, since tuberculosis can both present with fever and cough, it is important to always wear the highest level of respiratory protection available when dealing with a client with symptoms of ARI.

Examples of diseases spread by droplet transmission include influenza, meningitis, SARS, rhinovirus and respiratory syncytial virus (RSV).

PREVENTION OF DROPLET TRANSMISSION

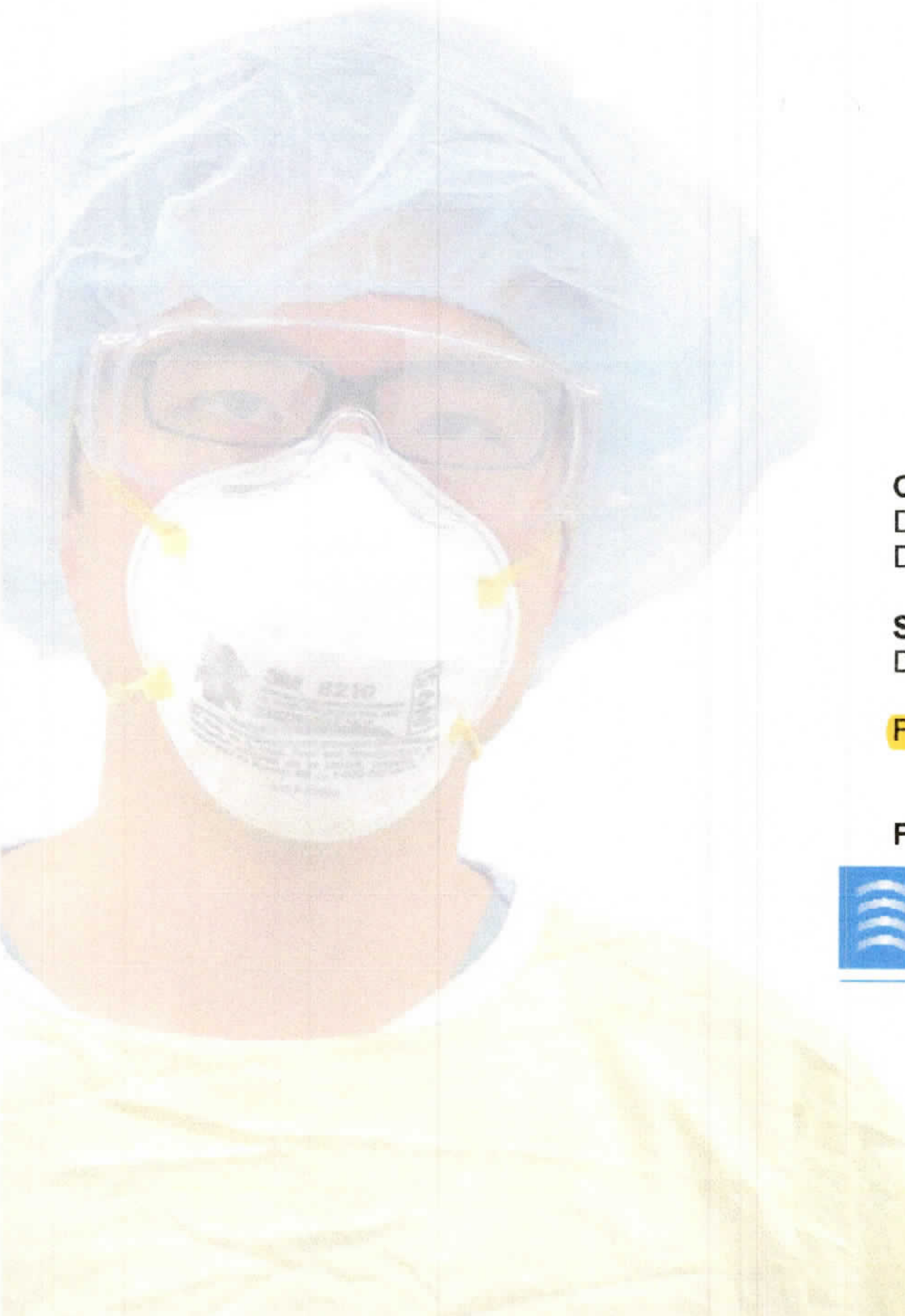
- **Wearing eye protection and a surgical mask (if available) or reusable (elastomeric) respirators when within two metres of client with ARI.**
- **Wearing medical gloves if within two metres of client.**
- **Performing excellent hand hygiene after gloves are removed and ensuring cleaning and disinfection of all used equipment.**

Occupational Health and Safety Agency for Healthcare in BC report issued on April 30, 2004 titled Protecting the Faces of Health Care Workers: Knowledge Gaps and Research Priorities for Effective Protection Against Occupational-Acquired Respiratory Infectious Diseases. This report shows how elastomeric respirators were known to reduce risk of infection about 3 times better than an N95 and close to 20 times better than a surgical mask.

Source:
https://www.paho.org/hq/dmdocuments/2009/Protecting%20the%20faces%20of%20health%20care%20workers.pdf

Protecting the Faces of Health Care Workers:

Knowledge Gaps and Research Priorities for Effective Protection Against Occupationally-Acquired Respiratory Infectious Diseases



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Final Report- April 30, 2004

Funded by:
THE CHANGE FOUNDATION
Creative Change for Better Health

Occupational Health and Safety
Agency for Healthcare in BC

2. **Reusable or elastomeric respirators**, either half face or full face, where the facepiece can be cleaned and reused but the filter cartridges are discarded and replaced when they become unsuitable for further use, and

3. **Powered air-purifying respirators (PAPRs),** where a battery-powered blower moves the air through the filters to the face.

Assigned protection factors – APFs

The level of protection afforded by particular class of respirators is based on its assigned protection factor (APF). An APF is a measure of the anticipated level of workplace respiratory protection that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users [15,18,19]. The APF is a special application of the general protection factor (PF) concept. The PF is the ratio of the amount of contaminant to which a person would be exposed without a respirator, to the amount of contaminant to which a person is exposed with a respirator. This is determined by comparing the amount of contaminant inside the facepiece, C_i to the amount of contaminant outside the respirator, C_o, such that

$$PF = C_o/C_i$$

Since C_o is equal/greater than Ci the protection factor is always equal or greater than unity.

APFs are used as a regulatory requirement used in establishing what type of respirator to use in a given situation. It is calculated assuming by multiplying the APF by the 8-hour exposure limit for a particular contaminant to which the worker may be exposed. For example a respirator with an APF of 10 will allow the worker to work in an atmosphere up to 1000 ppm where the 8-hour exposure limit for the contaminant is 100 ppm (i.e., 10 x 100 = 1000).

This regulatory mechanism has not been applied to bioaerosols, since no exposure limits have been established for any disease-causing microorganisms. Nevertheless, it is assumed that the higher the APF, the greater the level of protection for the worker. Thus a device with an assigned protection factor of 10 allows for penetration through the filter medium up to 10%; an APF of 25 allows penetration up to 2.5% and an APF of 1000 allows penetration up to 0.1%. The actual risk of disease transmission associated with these APFs is unknown and likely varies markedly depending on the organism of interest and the clinical situation. From a practical perspective, a properly fit-tested particulate face piece respirator or elastomeric half face piece respirator commonly provides protection factors from several dozen to several hundred-fold levels of protection when assessed by quantitative fit testing techniques. The APFs for different types of respirators are shown in Table 2.5.

noted below. This is of little consequence to the health care setting. "N" type devices are suitable for most health care applications.

Temperature and relative humidity have historically been shown to have an effect on respirator efficiencies [27]. However, recent testing of newer electrostatic respirators suggests that the effects of relative humidity on filtration efficiency are no longer very significant, most likely due to technological advancements in the filter media [35]. Polypropylene, the basis for most 42 CFR Part 84 respirator filter media, is a highly hydrophobic material – the fibres do not absorb water.

With respect to TB exposure, NIOSH has approved all filter media of respirators certified as 42 CFR Part 84 compliant for use against TB exposure, since the filters are more efficient at the 1 μm size than at the most penetrating particle size (0.3 μm) size. Since individual viruses are smaller than the most penetrating particle size, they will be effectively filtered by all 42 CFR Part 84 compliant respirators. Polypropylene filter media have also proved to be highly effective in filtering particles in the size range typically associated with viruses and fungal spores. Of greatest concern are viruses carried on droplets near the most penetrating particle size, as they have a higher probability of penetrating a respirator than an individual virus.

However, most viruses which cause respiratory and gastrointestinal disease in humans, must be contained in large droplets (>5 μm) in order to survive outside the body and transmit disease from person-to-person. This includes such common respiratory pathogens as influenza, respiratory syncytial virus (RSV) parainfluenza viruses, the common coronaviruses and others. The notable exceptions are measles, varicella zoster virus (chickenpox) and smallpox which apparently can survive in small diameter droplets or droplet nuclei and can be transmitted by air over long distances [36].

Typically disposable particulate respirators are constructed from a filter material in the shape of a formed cup or loosely in the shape commonly called the "duck-bill". Approved half face-piece devices are designed to sit on the bony framework of the face – over the jawbone and cheekbones. Approved half face-piece respirators are designed to form a secure seal where the device meets the skin of the face in accordance with performance criteria established by NIOSH. Approved devices are supplied with two straps; typically, one is designed to be placed over the back-top of the head, the other around the neck. This is to ensure the device is pulled both up and down over the jawbone and cheekbones to facilitate the seal with the face.

The skin-to-respirator seal is important since the space within the respirator is under negative pressure during inhalation. As a consequence, air-purifying respirators are classified as "negative-pressure" devices unlike respirators that are supplied by either ambient-pressure air (PAPRs) or high pressure air (airline or SCBA). The latter are classified as "positive-pressure" devices. Accordingly, positive pressure devices provide the wearer with a higher level of protection than negative-pressure devices when the respirator is not able to form a seal with the face. Loose fitting PAPRs are not positive pressure according to the respirator classification system.

Half face piece respirators – both filtering face-piece type such as the N95s as well as elastomeric devices – are assigned protection factors of 10 (see Table 5).

protection for pathogenic agent "A" but a N100 is required for agent "B" since it is assessed as presenting a higher risk of infectivity and/or virulence. Table 2.6 summarizes the factors to consider when choosing respiratory protection for healthcare workers.

For example, a N95-rated respirator is considered an appropriate device by CDC and NIOSH for protection against bioaerosols containing *Mycobacterium tuberculosis* since, in part, N95s are worst-case challenged tested to aerosols with aerodynamic diameters averaging 0.3 µm. A single tubercle bacillus measures around 0.8 µm [31] and this study found that 42 CFR Part 84 rated respirators offer much greater efficiency than their 30 CFR Part 11 predecessors, particularly at higher flow rates (moderately high respiratory flows – 85 L/min).

No government or other agency has yet specified an acceptable occupational risk of a *Mycobacterium tuberculosis* infection, the organism most often studied in relation to occupational risk of infection. The same is true for other pathogenic agents, although the scientific literature presents a number of articles that describe in detail risk models [5,9,46-48] . Infectivity data, is available for the Coxsackie A-21 virus where the aerosol infectious dose for tissue culture has been established as 28 times the $TCID_{50}$ (50% tissue culture infectious dose)[11].

Barnhart et al. [49] has shown that, for tuberculosis in health care settings, based on the estimated aerosol infectious dose from Nicas, [5] and analysis of TB skin-test conversion rates, the use of respiratory protection is estimated to reduce the risk of skin-test conversion by the following proportions:

- surgical mask – 2.5 fold reduction
- disposable dust/mist/fume (30 CFR Part 11) respirators – 17.5 fold
- disposable HEPA respirators – 17.5 fold
- elastomeric HEPA respirators – 45.5 fold
- HEPA-fitted PAPR – 238 fold reduction

Note that the no. 42 CFR Part 84 devices were not available at the time of this study, as they only became commercially available in July of 1998.

The authors based their risk assessment on 130 TB patients who produced an average of 0.25 infectious quanta per hour but with marked variation, ranging from 0 to 60 infectious quanta per hour. An infectious quantum is the number of infectious droplets required to cause infection in a prescribed number of susceptible individuals [50].

Lee et al.also estimated the risk of TB infection using data from their fit test studies and the cumulative risk of infection estimated on a Poisson probability model in a manner that incorporated the rate of successful fit tests of the various brands of respirators for which quantitative fit-tests were conducted [3]. Cumulative infection rates were calculated for *M. tuberculosis* infection risks as follows:

- With no respirator use
    - low risk scenario produced 1-yr and 5-yr cumulative risks of 0.0133 and 0.0648, respectively
    - high risk scenario produced 1-yr and 5-yr cumulative risks of 0.0522 and 0.235, respectively.

Table 2.6 (continued)

Air-purifying Particulate Non-powered Half face Elastomeric facepiece-type Particulate filter cartridges	- Can be reused (long-term) - Can be cleaned - Unrestrictive mobility - Most models are light weight - Moderate cost over long term - APF of 10 - Most models easy to breathe through (low breathing resistance) - Most models light weight - Low profile models allows good peripheral vision - Easy to fit check - Can be fit tested - Meets CDC criteria for protection against TB and other bioaerosols	- Negative pressure device increases inward leakage - Facial hair or scars or certain face types will interfere with facial seal - Moderate initial cost - Presence of exhalation valves and will allow contamination in a sterile field - Require disinfection between use - Requires routine maintenance - No eye/face protection - Communication more difficult than for disposables - Some models have a slightly higher breathing resistance - Some models are heavy - Some models affect peripheral vision - More threatening to patients (the more industrial it looks, the more intimidating)
Air-purifying Particulate Non-powered Full face Elastomeric face piece-type Particulate filter cartridges	- Can be reused - Can be cleaned - Unrestrictive mobility - Provides eye/face protection - Moderate cost over long term - More protective - APF of 100 - Most models provide adequate peripheral vision - Easy to fit check - Can be fit tested - Slightly higher breathing resistance - Meets CDC criteria for protection against TB and other bioaerosols	- Negative pressure device increases inward leakage - Facial hair or scars or certain face types will interfere with facial seal - All units have exhalation valves and will allow contamination in a sterile field - Higher initial cost than half facepiece type - Prescriptive glasses cannot be worn due to interference with facial seal - Requires special prescriptive inserts - heavier and bulkier - Decreased comfort level - Requires routine maintenance - Require disinfection between use - Communication more difficult - Some models provide limited peripheral vision - More threatening to patients

Section C

Personal communication with government officials and top politicians plus what politicians and political parties knew of the negligence as well as the steps needed to correct it

1

June 3, 2020 Facebook private message from NDP MPP France Gelinas letting Nicolas Smit know she shared his information with the provincial government and had read his suggestions to criticize the government for the ongoing negligence.

Source: Facebook Messenger private message

2

Unanswered letter from NDP MPP Kristyn Wong-Tam to Dr. Kieran Moore sent on December 9, 2022. Ms. Wong-Tam writes about how it is pressing for the Ontario Chief Medical Officer of Health (CMOH) to explain why the 100,000 elastomeric respirators the province locked up since July 2020 were not distributed to frontline workers when it would've significantly improved their safety. She explains how hospitals had to find out about the Ontario Health recommendations to use elastomeric respirators as N95s alternatives by word of mouth from Ministry of Labour inspectors, how the government spread dangerous misinformation, and how they kept the information about the purchase of the locked up stockpile of PPE from the Auditor General when she was auditing the province's purchase of PPE during the pandemic.

Source: https://www.kristynwongtam.ca/mooreletter

3

April 22, 2021 email Nicolas Smit received from the government on behalf of the Ontario Minister of Health Christine Elliot in response to his November 25, 2020 letter which NDP MPP Jamie West provided the Minister months later. The letter did not provide answers to the questions posed in his letter while confirming the province is still in the process of trying to get the PPE workers need.

Source: Email communication

4

November 25, 2020 letter Nicolas Smit wrote that NDP MPP Jamie West shared with the Ontario Minister of Health months later. Nicolas alerted the Minister to the misinformation the government was spreading, the need to let healthcare workers and the public know elastomeric respirators were safe plus recommended by Ontario Health, the need to stop pretending PPE shortages were out of their control when the government was purposely withholding the best PPE they had available from workers and more.

Source: Letter written by Nicolas Smit to the Ontario Minister of Health

5

November 25, 2020 Facebook post by Jamie West sharing the Sudbury Star article with quotes from Nicolas Smit and NDP MP Carol Hughes. Jamie lets his followers know the province recommended elastomeric respirators as N95 alternatives, that they were safe to use, that the exhalation valve could be covered if additional source control was needed and that the province had a stockpile available.

Source:
https://www.facebook.com/JamieWestNDP/photos/a.286720765105678/1078260219285058/

6

November 30, 2020 Ontario NDP press release explaining how the NDP is worried about the harm being done by not ensuring long term care homes and hospitals have the N95s needed to keep staff safe. While the NDP MPP Jamie West complained about long term care homes going without a single N95 available for staff from June to November 2020, there was no attempt to ask the province to distribute the 100,000 elastomeric respirators they had kept locked up in order to prevent the harm that was being done to workers. Just days prior Mr West had posted on social media about the importance of elastomeric respirators and stockpile the government had available.

Source: https://www.ontariondp.ca/news/mpps-demand-ford-stop-withholding-n95-masks-sudbury-seniors-care-facilities-frontline-health

7

January 22, 2021 email Nicolas Smit received from NDP MPP Jamie West explaining how he's never heard of unions mentioning the need for elastomeric respirators of for the province to distribute their stockpile. He confirms having read the December 10, 2020 Radio Canada investigation with quotes from union leaders and Nicolas Smit then commits to going to speak to Michael Hurley to see if the NDP should speak out about these issues.

Source: Email communication

8

February 1, 2021 email from NDP MPP Jamie West to Nicolas Smit explaining that a website update is all that is needed for the government to fulfill their duty to inform workers of the hazards in the workplace. Jamie says he won't speak up about the negligence simply because Nicolas alerted him to it and that it would take unions, workers & workplaces contacting him to be willing to speak up about workers not knowing about them. Jamie says he would no longer speak with Nicolas Smit about any of these issues. The email chain includes an email Nicolas forwarded him from CUPE's National representative for Health and Safety, Paul Sylvestre explaining CUPE had reached out to NDP to let them know their advocacy around elastomeric respirators was need and that they would improve worker safety.

Source: Email communication

9

July 28, 2020 Facebook private message from NDP MP Health Critic Don Davies to Nicolas Smit letting Nicolas know he has read most of his materials, believed elastomeric respirators would be helpful to keep people properly protected from being infected and asking Nicolas what he can do to help.

Source: Facebook Messenger private message

10

August 4, 2020 Facebook private message from NDP MP Health Critic Don Davies to Nicolas Smit thanking him for sharing valuable information with him about elastomeric respirators and explaining that he didn't understand why the Ontario government wasn't using them, that he planed to speak with NDP MPP France Gelinas about the ongoing negligence and failure by the province of Ontario to use them. Don tries to lay the argument that he cannot speak up publicly about the negligence since it is solely a provincial problem and he cannot speak up about those issues as a federal politician.

Source: Facebook Messenger private message

11

July 18, 2021 Sudbury.com news article about CUPE health and safety specialist Andreane Chenier running as the NDP MP candidate for Nickel Belt in Ontario.

Source: https://www.sudbury.com/local-news/local-ndp-have-now-nominated-federal-candidates-in-both-sudbury-and-nickel-belt-3964283

12

July 31, 2021 tweets by NDP MP candidate and CUPE health and safety specialist Andreane Chenier saying the government will use elastomeric respirators if the NDP party ended up winning a majority during the federal election. When asked why CUPE and the NDP needed to wait for the NDP to win a majority when they had readily available for over a year, Andreane tries to backtrack and say it had been impossible to use elastomeric respirators upto that time because of the lack of storage. Despite CUPE quietly asking for the 100,000 elastomeric respirators to be distributed, Andreane said hospitals lacked the capacity to use them and then after confronted with reality that there was the ability to currently use them, she stopped advocating for the NDP to use elastomeric respirators.

Source:

https://twitter.com/PPEtoheros/status/1421520272478380032?s=20&t=NhTTc4drWyGbXzQBFJR5xQ

13

April 12, 2022 email by Max Chapman, NDP MPP Mike Mantha's assistant to Nicolas Smit thanking him for keeping Mike up to date on the negligence around elastomeric respirators and for sending him the detailed evidence of the negligence. The information Nicolas shared with Mike is also included in this email.

Source: Email communication

14

July 8, 2022 email to Nicolas Smit by Max Chapman, NDP MPP Mike Mantha's assistant letting Nicolas know the additional evidence including the direct evidence of a cover up happening with federal Liberal MP's plus the New York Times investigation he was quoted in would be shared with Mike. He also explains the work Mike does in Queens Park won't resume until August.

Source: Email communication

15

April 3, 2020 letter NDP MP Carol Hughes sent Minister of Health Patty Hajdu asking her to get the federal government to look into using elastomeric respirators to help quickly end the PPE shortage healthcare workers were facing.

Source: Letter from NDP MP Carol Hughes to MP Patty Hajdu

16

December 1, 2020 email chain between NDP MPP Carol Hughes and Nicolas Smit. Carol says she will not speak out about the widespread negligence that occurred around elastomeric respirators or apologize for spreading misinformation in news interviews that they are too dangerous to use because she assumed the PPE shortages were over so it would be a waste of time. She said it was good to know there were better options if shortages happened again and that opposition parties only have the power to criticize, suggest or advocate which is exactly what Nicolas was asking her and the NDP to do.

Source: Email communication

17

October 17, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit explaining the NDP did not think it worth speaking up about the negligence around elastomeric respirators during Question Period since Doug Ford would likely refuse to answer questions the NDP would ask about it. The email goes on to say there's no point holding a press conference to alert the public and ask for investigations since Doug Ford would say no to an investigation. The email also states that it wouldn't be worth asking the federal NDP to ask for investigations for the negligence by the federal government since Justin Trudeau would say no to investigations as well and that the only thing Nicolas could really do was file a police report if he wanted the police to investigate the criminal negligence that occurred. The chain of emails also shows how Ms Wong-Tam's office believed Covid was airborne, that masks saved lives and that people in long term care died as a result of proper masks not being sent to long term care homes.

Source: Email communication

18

December 14, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit once again asking if they should alert the Auditor General to the obstruction of justice that occurred after Doug Ford's office failed to alert the Auditor to the purchase of the 100,000 elastomeric respirators. It also contains another email confirming Kristyn sent the letter to Kieran Moore to ask about how the widespread negligence around elastomeric respirators occurred and that Nicolas would be alerted when he responded to the letter.

Source: Email communication

19

December 20, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit saying the only thing Kristyn would do to increase public pressure so Kieren Moore answers the letter in a timely manner is to put the letter on her website. The NDP refuses to hold a press conference, alert journalists or mention the negligence on social media or through other means. The NDP assumes journalists won't care about any of the negligence that occurred and they write that they have a quota on how many times they can reach out to journalists per month and think it would be a waste of time to use it to flag this widespread negligence to their attention.

Source: Email communication

20

January 13, 2023 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit letting Nicolas know that the Chief Medical Officer of Health had yet to answer Kristyn's letter in response to Nicolas' email from January 13, 2023 asking her office to confirm if the NDP had alerted the Auditor General to the purchases that were kept from the Auditor as they told him they would do. Nicolas also explains in that email that waiting for an answer before trying to have the negligence corrected while there were 322 active outbreaks at hospitals and long term care homes would delay helping end those outbreaks and that it would be negligent for the NDP to not speak up publicly after already not having an answer more than a month after sending the letter.

Source: Email communication

21

October 27, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit thanking Nicolas for letting them know about the widespread negligence that occurred around elastomeric respirators and that John officially asked Christine Elliot to provide a written answer into why the public had been kept in the dark about the importance of elastomeric respirators and why so little information had come out about the government's purchase of the 100,000 elastomeric respirators.

Source: Email communication

22

December 2, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit letting him know they were happy to have seen the Sudbury Star article mentioning elastomeric respirators and the province's stockpile they have available. The email also says the office will try and look into why the Minister of Health had taken an exceptionally long time without providing any answers.

Source: Email communication

23

December 17, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit saying they are happy to see the Radio Canada news investigation into the province not informing hospitals and long term care homes to the Ontario Health recommendations to use elastomeric respirators. They say that while the Minister was supposed to have given an answer by an original December deadline, she now had an extension and doesn't have to provide an answer until February 22, 2021 but that the office would try and get an answer much sooner.

Source: Email communication

24

January 25, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit saying John was happy to speak to CBC investigative journalist Natalia Goodwin, a CBC investigative journalist that was working with Nicolas to try and convince the CBC to launch a large investigation since November 2020. John's office says they were happy very reputable sources and associations were getting behind elastomeric respirators plus the need to investigate the negligence and that the Minister of Health had yet to provide John with answers to his questions from October.

Source: Email communication

25

February 22, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit sharing the answer John received on the last possible date the Minister had to provide answers. The email also shares the letter which provides a 1 paragraph answer explaining the public wasn't educated enough to be able to be told about the recommendations to use elastomeric respirators and that healthcare providers had been made aware of the stockpile.

Source: Email communication

26

October 15, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit letting him know John was not happy with the answer he received from the Minister of Health 8 months prior and that he would ask her to provide a much more detailed answer to learn each hospital and long term care home that received the elastomeric respirators and also why the entire stockpile wasn't distributed when so many hospitals and long term care homes lacked proper PPE for such a long period of time.

Source: Email communication

27

December 2, 2021 letter from the Minister of Health to John Fraser which didn't provide answers into John questions and instead gave a 1 paragraph answer explaining that 22,500 elastomeric respirators had been sent to hospitals without explaining why the entire stockpile wasn't distributed. The CBC investigation by Natalia Goodwin released June 10, 2021 included the confirmation by the government that the entire stockpile of 100,000 was still sitting in a warehouse not being used while a further 22,000 elastomeric respirators were supposed to be in use however unions confirmed to not have seen those in use either.

Source: Letter from PC MPP Christine Elliot to Liberal MPP John Fraser

28

February 25, 2021 email from Liberal MP Ryan Turnbull to Nicolas Smit letting him know he had been talking to the federal Liberal Caucus about the issues around elastomeric respirators and that he had also been talking about the negligence that occurred on social media.

Source: Email communication

29

March 2, 2021 email from Liberal MP Ryan Turnbull to Nicolas Smit thanking Nicolas for the detailed information about all the negligence around elastomeric respirators that occurred at the provincial and federal level. He also once again confirms he is speaking with the Liberal Caucus and that he will continue to promote the importance of elastomeric respirators on social media.

Source: Email communication

30

October 21, 2022 email from Liberal MP Nathaniel Erskine-Smith's office to Nicholas Smit thanking Nicolas for providing the background into the widespread negligence that occurred around elastomeric respirators including the misinformation spread by Health Canada on their websites.

Source: Email communication

31

October 25, 2022 email from Liberal MP Nathaniel Erskine-Smith's office to Nicolas Smit thanking Nicolas for the meeting they had that day and for sharing additional information about how widespread the negligence that had occurred at the federal level was.

Source: Email communication

32

January 31, 2023 email from Liberal MP Nathaniel Erskine-Smith's office to Nicolas Smit apologizing for the extreme length it took to get answers from Health Canada and it shares the information Health Canada provided their office. Instead of correct the misinformation, Health Canada refuses to admit to the misinformation despite MP Erskine-Smith sharing direct evidence with them including the CDC studies showing even uncovered exhalation valves provide better source control than surgical masks. While the majority of Canadians aren't wearing any mask, Health Canada provides a baffling answer saying they cannot let the public know about elastomeric respirators because the presence of exhalation valves possibly meant that those wearing them could allow unfiltered air to get through and infect those around the wearer. Health Canada doesn't explain why surgical masks and cloth masks are recommended despite having less source control protection than elastomeric respirators or why they are worried about exhalation valves letting unfiltered air into the environment when most people are not wearing any mask at all and are constantly allowing infected air into the environment.

Source: Email communication

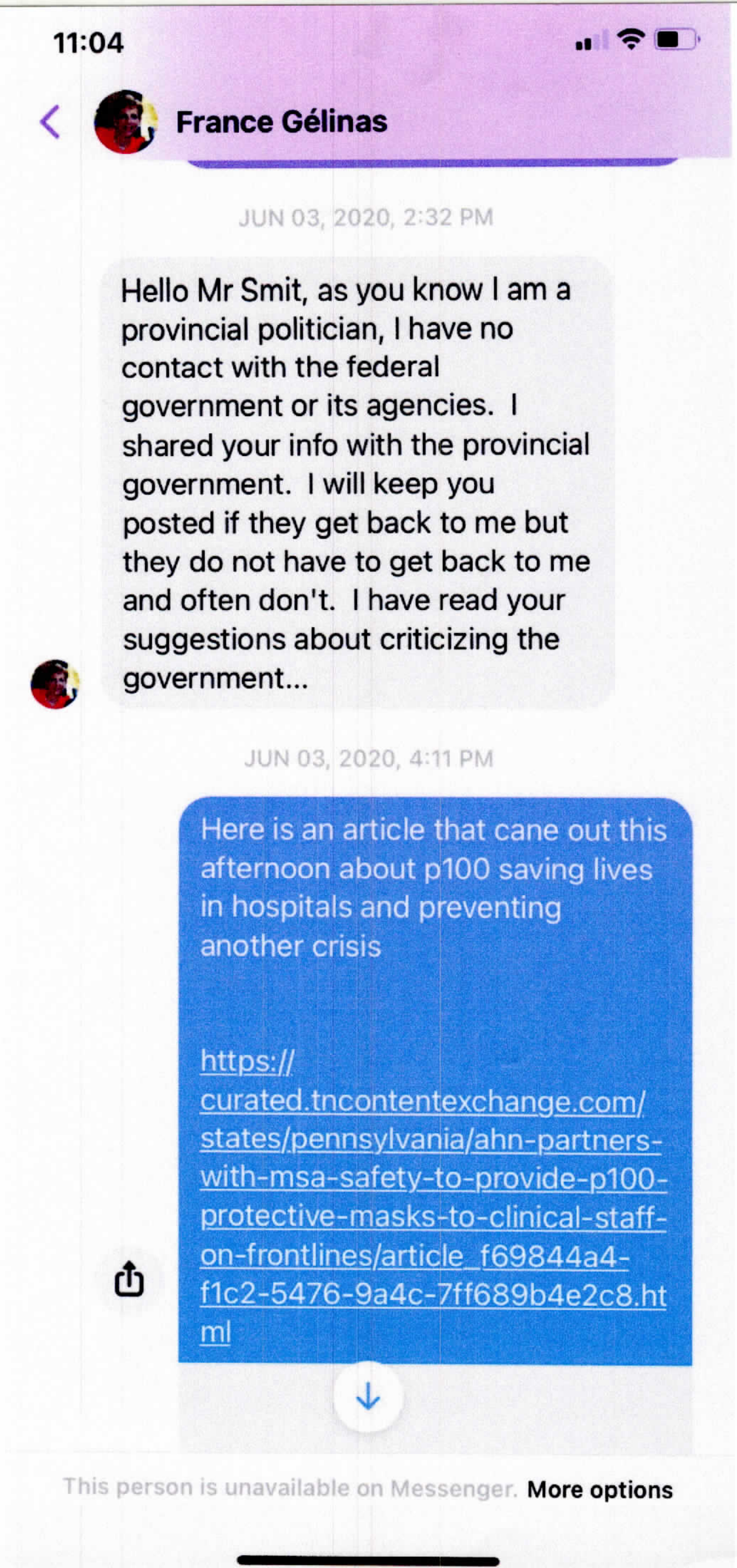
July 25, 2022 LinkedIn private message by Conservative Party MP John Barlow letting Nicolas Smit know he had shared all the information Nicolas provided him about the widespread negligence by the federal government around elastomeric respirators to the Conservative Party MP's that are critics for Procurement and Health Care.

Source: LinkedIn private message

1

June 3, 2020 Facebook private message from NDP MPP France Gelinas letting Nicolas Smit know she shared his information with the provincial government and had read his suggestions to criticize the government for the ongoing negligence.

Source: Facebook Messenger private message



JUN 03, 2020, 2:32 PM

Hello Mr Smit, as you know I am a provincial politician, I have no contact with the federal government or its agencies. I shared your info with the provincial government. I will keep you posted if they get back to me but they do not have to get back to me and often don't. I have read your suggestions about criticizing the government...

JUN 03, 2020, 4:11 PM

Here is an article that cane out this afternoon about p100 saving lives in hospitals and preventing another crisis

https://curated.tncontentexchange.com/states/pennsylvania/ahn-partners-with-msa-safety-to-provide-p100-protective-masks-to-clinical-staff-on-frontlines/article_f69844a4-f1c2-5476-9a4c-7ff689b4e2c8.html

This person is unavailable on Messenger.

Unanswered letter from NDP MPP Kristyn Wong-Tam to Dr. Kieran Moore sent on December 9, 2022. Ms. Wong-Tam writes about how it is pressing for the Ontario Chief Medical Officer of Health (CMOH) to explain why the 100,000 elastomeric respirators the province locked up since July 2020 were not distributed to frontline workers when it would've significantly improved their safety. She explains how hospitals had to find out about the Ontario Health recommendations to use elastomeric respirators as N95s alternatives by word of mouth from Ministry of Labour inspectors, how the government spread dangerous misinformation, and how they kept the information about the purchase of the locked up stockpile of PPE from the Auditor General when she was auditing the province's purchase of PPE during the pandemic.

Source: https://www.kristynwongtam.ca/mooreletter

Kristyn Wong-Tam
MPP TORONTO CENTRE

December 9, 2022

Dr. Kieran Moore
Office of Chief Medical Officer of Health
393 University Avenue, 21st Floor
Toronto ON
M5G 2M2

Dear Dr. Moore,

I am writing to your office to share concerns on two pressing matters.

The first one was brought to my attention by my constituent, Mr. Nicholas Smit.

Mr. Smit has provided documentation from the CBC and Radio Canada that the Province of Ontario bought 100,000 elastomeric respirators in June 2020 that were not distributed to frontline workers — who could have substantially benefited from high-quality personal protective equipment (PPE). Mr Smit also shared the New York Times article he was quoted in which details the long history of elastomeric respirators through prior pandemics including SARS plus H1N1 and how they remain overlooked despite offering better protection than N95s.

Mr. Smit also provided a local news article from Barrie, Ontario, from February 2021, which details how Ministry of Labour inspectors had to let hospitals experiencing deadly outbreaks along with PPE shortages know by word of mouth that elastomeric respirators could help to address their PPE shortages and that using elastomeric respirators went above and beyond government recommendations.

When the Auditor General investigated the province's personal protective equipment purchases made during the pandemic, she did not know to include the millions of dollars the province spent to buy the elastomeric respirators in her recent report released on December 2021.

Mr. Smit reported that the Province did not recognize the value of stockpiled elastomeric respirators. This meant Ontario workers were denied access to available PPE that could have kept them better protected from SAR-COV-2 infection.

Despite the Province saying only N95s and KN95s were known to be able to prevent infections, substantial evidence existed that elastomeric respirators provide equivalent and often superior protection. Additionally, elastomeric respirators can be safely reused for years.

Mr. Smit raised his concerns with my office that the Province spread misinformation about respirators with valves not being safe to use when CDC studies have shown even uncovered exhalation valves provide better source control protection than surgical masks. In addition to those CDC studies, both the Ontario Health PPE guidelines for health care workers and the Province's guidelines on how long-term care homes should use elastomeric respirators explains how to easily cover their exhalation-valves so that they can be used during aerosol generating medical procedures.

The Ontario government's failure to distribute and utilize recommendations to use elastomeric respirators hurt not only health care workers but also workers in congregate settings such as food plants, manufacturing facilities, and schools. If these respirators were freely distributed to essential workers, businesses might have reduced workplace transmission and avoided costly closures.

The second issue that I wish to raise is about the recent finding from the Auditor General of Ontario who reported last week that the government has in storage more than 100 million N95 respirators stockpiled. The health care system is in a state of emergency today. Frontline healthcare workers are at a breaking point and under tremendous strain with many choosing to leave the profession if things don't turn around quickly with more staff and resources. There is no reason to store the masks for use at a future date when we should put them into use now and not wait until 2030 when they expire.

While the SARS-COV-2 virus has evolved throughout the pandemic, so too has our knowledge and understanding of the transmission of viruses and what strategies are needed to keep people safe. Elastomeric respirators and N95 marks are an essential tool in our toolbox.

There are many Ontarians who would benefit from free high-quality masks. I call on you to work with the Provincial government and health partners to ensure that any publicly-funded stockpile of masks identified by the Auditor

General is distributed at no cost to Ontarians before their expiration date. Ontario cannot afford to waste these masks as our hospitals are currently straining to cope with surging respiratory infections in our communities.

I look forward to your reply and stand ready to do everything possible to protect the health and safety of Ontario. I welcome your comments and questions and can be reached at KWT-qp@ndp.on.ca or 416-972-7683.

Respectfully submitted,

Kristyn Wong-Tam
Member of Provincial Parliament for Toronto Centre
120 Carlton Street. Suite 401.
Toronto, Ontario
M5A 4K2

April 22, 2021 email Nicolas Smit received from the government on behalf of the Ontario Minister of Health Christine Elliot in response to his November 25, 2020 letter which NDP MPP Jamie West provided the Minister months later. The letter did not provide answers to the questions posed in his letter while confirming the province is still in the process of trying to get the PPE workers need.

Source: Email communication

From: Correspondence Services (MOH) CSU.MOH@ontario.ca
Subject: From the Ministry of Health / MOH ref 361-2021-2073 / JJ
Date: Apr 22, 2021 at 4:09:25 PM

MPP Jamie West forwarded to the Honourable Christine Elliott, Minister of Health, your letter regarding elastomeric respirators and personal protective equipment (PPE) for health care workers. I appreciate that you took the time to raise your concerns. Staff from the Ministry of Health (the ministry) provided information below regarding your concerns. I'm sorry for our delay in responding.

Since the start of the COVID-19 pandemic, there has been an urgent need to procure PPE and critical supplies to protect health care workers, patients and frontline staff in other sectors.

The global competition to secure critical PPE and medical supplies is fierce, yet the Ontario government is working hard to make sure the province has the PPE needed to keep Ontarians safe. The ministry is working with supply chain partners across the province to procure supplies and equipment to address the most critical shortages.

The government has spent nearly $1.4 billion to ensure PPE and critical supplies are in the hands of Ontario's health care professionals and other frontline workers. This investment has purchased nearly 400 million masks, 1 billion gloves, 40 million gowns, over 17 million face shields and 30 million N95 respirators.

Health care facilities, including hospitals and long-term care homes, are aware of the PPE available through the Ontario government and can access PPE from the provincial pandemic stockpile on an emergency basis. This option is available for those who have exhausted all efforts to procure their own stock through the escalation process. The ministry is allocating supplies from the stockpile according to critical needs and working with regional partners to support all requests.

The ministry continues to provide same-day PPE deliveries to hospitals, long-term care and retirement homes, and other facilities to support essential workers in all settings and ensuring supplies and equipment are expedited to those most in need.

Regarding elastomeric respirators specifically, as part of its mandate, Public Health Ontario (PHO) provides scientific and technical advice and support to the Ontario government. In April 2020, PHO developed guidance regarding PPE, which included information about elastomeric respirators. The guidance indicated that PPE designed for reuse are a safe alternative to single-use PPE.

Further, Ontario Health included guidance regarding elastomeric respirators in their PPE recommendations, including information about use of elastomeric respirators when disposable N95 respirator supplies are low.

I hope this information is helpful. Again, thank you for writing.

Sincerely,

J. Jarvis
Correspondence Services
Ministry of Health

c: Jamie West, MPP, Sudbury

Confidentiality: This email contains information intended only for the use of the individual named above. If you have received this email in error, we would appreciate it if you could advise us through the ministry's website at www.health.gov.on.ca/en/common and destroy all copies of this message. Thank you.

Avis de confidentialité : ce courriel contient des renseignements destinés uniquement à l'usage de la personne nommée ci-dessus. Si vous avez reçu ce courriel par erreur, nous vous serions reconnaissants de bien vouloir nous en informer sur le site Web du ministère www.health.gov.on.ca/fr/common et de détruire tous les exemplaires de ce message. Merci.

November 25, 2020 letter Nicolas Smit wrote that NDP MPP Jamie West shared with the Ontario Minister of Health months later. Nicolas alerted the Minister to the misinformation the government was spreading, the need to let healthcare workers and the public know elastomeric respirators were safe plus recommended by Ontario Health, the need to stop pretending PPE shortages were out of their control when the government was purposely withholding the best PPE they had available from workers and more.

Source: Letter written by Nicolas Smit to the Ontario Minister of Health

November 25, 2020

Dear Christine Elliot,

I am writing to you today because health care workers in Ontario continue to come forward to say they lack proper PPE to stay safe including elastomeric respirators and N95s. Despite the government claiming they are doing everything they can to prevent the spread and protect health care workers, they have refused to take simple steps such as holding a press conference to make sure the public, hospitals, long term care homes and health care workers would know Ontario Health updated their PPE guidelines, that safe N95 alternatives exist, are recommended by Ontario Health and have been available from the government stockpile since June.

Despite having enough PPE to protect 100,000 health care workers with N95 level or higher protection for the last 5 months, the province decided it was better to warehouse elastomeric respirators instead of distributing them to health care workers across the province because they came to the conclusion that health care workers did not want them. In what world would health care workers not want safe, recommended and available PPE when they are afraid to go to work because they know they lack the PPE to ensure they stay safe and do not bring the virus homes to their families?

How can the problems with the N95 shortage and PPE be solved if PPE that is recommended sits on a shelf in a warehouse instead of protecting health care workers from infection? Due to the lack of proper PPE, as of November 25th, Ontario currently has 104 long term care homes with active outbreaks and 299 long term care homes where the outbreaks have finally be resolved. Some long term care homes have over 70 staff that have become infected and health care workers keep explaining that despite active outbreaks, they are often not given anything but surgical masks and if they do get an N95, they are told to keep using it for days at a time.

In August, when news organizations like CTV News came out with articles about masks and respirators with valves being too dangerous to use under any circumstance, they cited misleading information from Health Canada, Ontario Health and Public Health as evidence. The government not only refused to remove the misleading information from their own websites, they also refused to ask CTV News to correct their article to present accurate information and let the public know elastomeric respirators could be safely used despite having an exhalation valve.

The province is telling businesses they need to shut down in order to slow the spread of the virus and yet the province does not make the effort to provide PPE to reduce the spread at hospitals and long term care homes which would significantly reduce outbreaks and the community spread that tend to follow. If businesses where outbreaks occur such as food plants knew that N95 alternatives exist, they could prevent outbreaks at their operations and prevent the need to temporarily shut their businesses down to stop the outbreak. Why has the province decided to continue only to talk about N95s at press briefings when they know that N95 masks are in short supply but elastomeric respirators are considered to offer equal or greater protection than an N95, are reusable for years and are readily available from the government stockpile?

Why has the government refused to properly protect health care workers, be transparent with the public about what PPE is available and recommended and instead focused their energy to pass bill 218 which protects the government and long term care homes from negligence including the refusal to protect health care workers and residents in long term care homes with recommended PPE?

When the pandemic is over, the government will not be judged on how well they protected health care workers during the pandemic but how their inactions hurt health care workers and the economy. Instead of forcing hospitals and long term care homes to ask for elastomeric respirators which they often do not know are even available, Ontario Health should be distributing them to hospitals and long term care homes with active outbreaks as well as health care institutions that are not yet providing health care workers with N95s or N95 alternatives. Despite recommending elastomeric respirators over reusing N95s, the government has failed to approach any manufacturer from 3M even when they made their original purchase of 100,000 elastomeric respirators.

It is important that journalists know elastomeric respirators are safe and available because the more news articles that come out about the recommendations to use them, the more likely they will get used and other provinces and countries could benefit from this knowledge. Public awareness about safe N95 alternatives could also generate donations from businesses, individuals, corporations or philanthropic donors so that charities could benefit from using them to ensure they can keep helping people. With elastomeric respirators in widespread use, hospitals would not only prevent infections among their staff but they could also resume performing more surgeries and treatments that have been delayed because hospitals are not able to stop the spread.

Now that you and the PC government have protected yourselves and long term care homes from being sued for negligence with bill 218, it is time to protect health care workers and prevent the spread of the virus.

Yours Truly,

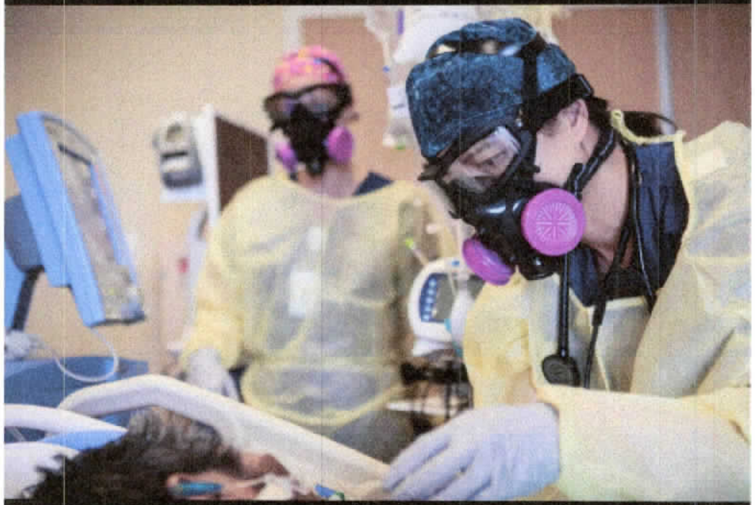
Nicolas Smit

5

November 25, 2020 Facebook post by Jamie West sharing the Sudbury Star article with quotes from Nicolas Smit and NDP MP Carol Hughes. Jamie lets his followers know the province recommended elastomeric respirators as N95 alternatives, that they were safe to use, that the exhalation valve could be covered if additional source control was needed and that the province had a stockpile available.

Source:
https://www.facebook.com/JamieWestNDP/photos/a.286720765105678/1078260219285058/

facebook



Jamie West NDP
November 25, 2020 ·

Nicolas Smit has been spearheading a campaign that aims to get elastomeric respirators, otherwise known as P100 masks, into the hands of Ontario health-care workers since the beginning of the pandemic this spring.

"Ontario has updated their PPE guidelines and they have a stockpile of elastomeric respirators. However, the government overlooked letting the public know. These respirators are now considered safe."

Ontario Health was initially reluctant to approve elastomeric respirators for use in a health-care setting due to the disadvantages and risks associated with their design. Smit said that there are ways to maintain source control to address exhalation valve concerns, including placing a surgical, procedural or cloth mask over the valve to create a sterile environment, something that Ontario Health echoed in its new guidelines.

https://bit.ly/374YCow **See less**

12 25

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November 30, 2020 Ontario NDP press release explaining how the NDP is worried about the harm being done by not ensuring long term care homes and hospitals have the N95s needed to keep staff safe. While the NDP MPP Jamie West complained about long term care homes going without a single N95 available for staff from June to November 2020, there was no attempt to ask the province to distribute the 100,000 elastomeric respirators they had kept locked up in order to prevent the harm that was being done to workers. Just days prior Mr West had posted on social media about the importance of elastomeric respirators and stockpile the government had available.

Source: https://www.ontariondp.ca/news/mpps-demand-ford-stop-withholding-n95-masks-sudbury-seniors-care-facilities-frontline-health

MPPs demand Ford stop withholding N95 masks to Sudbury seniors care facilities, frontline health workers

QUEEN'S PARK –Doug Ford must stop the unacceptable delays, and get N95 masks to Sudbury seniors care facilities, frontline health care workers and caregivers now, said local NDP MPPs during question period on Monday.

Sudbury's seniors care facilities have been waiting six months, and they still have not received the masks they need, while the Ford government continues to drag its heels on updating provincial health directives to ensure delivery of urgent PPE.

"In Sudbury, the first wave of COVID-19 caused the loss of a life at St Joseph's Continuing Care. Although the Minister of Long-Term Care, continues to state that long-term care homes have the PPE they require, Jo-Anne Palkovits, the CEO of St-Joseph Complex Continuing Care Hospital and two long-term care homes, have been trying to replenish their stock of N95 masks since June. Six months have passed and St-Joseph's is still missing the PPE they need." said Jamie West, MPP for Sudbury.

"The premier needs to listen to science, update health directives and get these badly needed N95s into long term care and retirement homes in Sudbury, and across the province, now."

"After several months of delay, will the premier commit to finally getting the N95 PPE masks to St Joseph's Continuing Care in Sudbury?"

France Gélinas, MPP for Nickel Belt and the NDP's health critic said front line health workers need the Ford government to update its health directives — just one of the roadblocks the government has in place preventing health care workers from getting the N95 masks they need.

Gélinas said that last week the Ontario Nurses Association wrote to Ontario's Chief Medical Officer of Health stating that Ontario still has not updated public health directives to recognize the aerosol risk that COVID presents, despite the fact that it's been almost two months since the Centre for Disease Control recognized COVID could spread through aerosol in the air, and one month since Public Health Canada updated their directive.

"From the beginning the Ford government refused to use the precautionary principle; the number one recommendation from SARS. Since then 9,554 health care workers were infected and eight Long Term Care workers died of COVID-19," said Gélinas.

"Now the science is here, this coronavirus transmits through aerosol. This means our frontline health care workers need an N95 respirator or better when caring for a suspected or infected people.

"When is this government going to listen to science, listen to public health experts and update their directive on COVID-19 transmission?"

7

January 22, 2021 email Nicolas Smit received from NDP MPP Jamie West explaining how he's never heard of unions mentioning the need for elastomeric respirators of for the province to distribute their stockpile. He confirms having read the December 10, 2020 Radio Canada investigation with quotes from union leaders and Nicolas Smit then commits to going to speak to Michael Hurley to see if the NDP should speak out about these issues.

Source: Email communication

From: **West, Jamie** JWest@ndp.on.ca
Subject: **RE: NDP Refusal to Expose PPE Problems**
Date: **Jan 22, 2021 at 1:43:43 PM**
To: smitnicolas@hotmail.com

Nicolas,

I appreciate your tenacity around elastomeric respirators. I think that it is great that you are helping to make more and more people aware.

As I responded earlier, I am not aware of any unions or other organizations requesting this specific type of PPE. In fact, when I speak with unions and organizations, they are all very aware of this type of PPE, but are advocating for N95 masks instead. I will continue to have these conversations, however, as an MPP, it's not my role to insist that individuals or organizations use certain PPE based on what you think is best for them. Although you are passionate about helping others, you do not have the authority to speak on behalf of workers or organizations that you do not represent.

In the meantime, I want to thank you for sending the article that included ONA and Michael Hurley, from the Council of Ontario Hospital Unions. I will commit to reaching out to them to see if they would like our assistance.

PS - Following-up on my previous email (see below), it has been nearly two months since you received my response. I offered to write a cover letter to any letter that you would like to send to the Minster of Health. However, I haven't received anything. Is this something you still want to pursue?

~ Jamie West,
MPP/Député Sudbury

From: West-CO, Jamie <JWest-CO@ndp.on.ca>
Sent: November 25, 2020 12:09 PM
To: 'smitnicolas@hotmail.com' <smitnicolas@hotmail.com>
Subject: RE: NDP Refusal to Expose PPE Problems

Nicolas,

Thank-you for reaching out with suggestions about ways to protect workers from COVID-19. I would like to help, but I need some clarification.

From what I read, you believe that the Conservative government is refusing to let the public know that Ontario Health has approved and recommended elastomeric respirators as a safe alternative to the N95 masks. However, I can't seem to connect the dots around this being "hidden".

Are you certain that this information is being hidden from the public? For example, the 'PPE guidelines' website that you hyperlinked below is a government of Ontario website (the Ontario Health website). Similarly, I spoke with health professionals last spring, who told me that they were aware of the N100 masks.

In terms of spreading awareness, I did share your Sudbury Star article on Social Media.

In terms of your requests: If you would like to draft a letter to the Minster of Health, I would write a cover letter on your behalf and share her response. Also, although it wouldn't make sense for me to write an identical question on the Order Paper (as the one that MPP Fraser tabled), I will also commit to sharing that response with you.

~ Jamie West,
MPP/Député Sudbury

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: November 23, 2020 1:05 PM
To: West-CO, Jamie <JWest-CO@ndp.on.ca>; Gelinas - QP, France <gelinas-qp@ndp.on.ca>; Waddell, Damien <WaddellD@ndp.on.ca>; don.davies@parl.gc.ca <don.davies@parl.gc.ca>; carol.hughes@parl.gc.ca <carol.hughes@parl.gc.ca>
Cc: Dorothy Wigmore <dewwinnipeg@web.ca>
Subject: NDP Refusal to Expose PPE Problems

Hi Jamie,

It has now been over two months since I have reached out to you and your team to expose the scandal of Ford's government refusing to let the public know that Ontario Health has approved and recommended elastomeric respirators as a safe alternative as well as their refusal to distribute any of the 100,000 elastomeric respirators from their stockpile. While you refuse to even ask Ford to hold a press briefing to let the public know about Ontario Health's PPE recommendations to use elastomeric respirators as a safe N95 alternative, I have been able to get Ontario Health critic and MPP John Frasier to investigate. John's question to the Minister of Health about this negligence can be found on page 52.

https://www.ola.org/sites/default/files/node-files/house/document/pdf/2020/2020-11/211_November_23_2020_Orders_1.pdf

While Ontario Health refuses to even let the public know elastomeric respirators are safe and available, cities like New York have stopped buying N95s for the first responders and are now only buying elastomeric respirators.

https://www.nydailynews.com/new-york/ny-fdny-new-covid-mask-protection-20201110-7ehwdcduwffcni3qigd2vp6dla-story.html

While Ontario Health put up their PPE guidelines online to recommend elastomeric respirators as a safe alternative to N95s, Manitoba's Shared Health and the CDC put their guidelines on how health care workers can safely use, clean and maintain elastomeric respirators.

https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

https://sharedhealthmb.ca/files/covid-19-reuse-of-elastomeric-respirators.pdf

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

Once this problem is exposed to the public, I will provide my emails and messages from the NDP and members like France Gelinas who have refused every opportunity to clear up misinformation they released about elastomeric respirators being dangerous. I will also provide emails and phone logs to politicians such as yourself to show that France was not the only NDP politician that refused to take basic steps to help health care workers and the public know about PPE that could have been distributed to ltc homes in July to prevent the outbreaks and mass health care worker infections we are now seeing. Because France and the NDP have refused to expose the problem to the public and make sure everyone knows elastomeric respirators are safe, mining companies have stopped donating them to hospitals since they assume they are dangerous. If you would have spoken to Samantha Espley, the Canadian president of the Canadian Institute of Mining, she could have let you know the damage that was done when France explained no evidence existed that proved they could be safely used in a health care setting.

https://www.sudbury.com/local-news/sudbury-engineer-urging-mining-industry-to-donate-respirators-2278016

I will make sure that politicians that refused to help will be held accountable not only for their actions but also their inactions.

Sincerely,

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February 1, 2021 email from NDP MPP Jamie West to Nicolas Smit explaining that a website update is all that is needed for the government to fulfill their duty to inform workers of the hazards in the workplace. Jamie says he won't speak up about the negligence simply because Nicolas alerted him to it and that it would take unions, workers & workplaces contacting him to be willing to speak up about workers not knowing about them. Jamie says he would no longer speak with Nicolas Smit about any of these issues. The email chain includes an email Nicolas forwarded him from CUPE's National representative for Health and Safety, Paul Sylvestre explaining CUPE had reached out to NDP to let them know their advocacy around elastomeric respirators was need and that they would improve worker safety.

Source: Email communication

Re: CBC Investigation Into Elastomeric Respirators

West-CO, Jamie <JWest-CO@ndp.on.ca>

Mon 2021-02-01 1:18 PM

To:

- Nicolas Smit <smitnicolas@hotmail.com>

Cc:

- Kevin Hedges <kevinhedges.kh@gmail.com>;
- Mario Possamai <mario.possamai@sympatico.ca>;
- Simon Smith <sjsmith@kos.net>;
- Andre Tartre <andretartreCIH@hotmail.com>;
- Alec Farquhar <afarquhar7@gmail.com>;
- Dorothy Wigmore <dewwinnipeg@web.ca>;
- Linda Silas <lsilas@nursesunions.ca>;
- Geneviève Marchand <Genevieve.Marchand@irsst.qc.ca>;
- tfrieden@resolvetosavelives.org <tfrieden@resolvetosavelives.org>

Nicolas,

As always, MPP West appreciates your advocacy and your ongoing attempts to raise the awareness around this type of protective equipment. However, copying our office on every email, newsletter, and news article you read is not effective or helpful (at one point, on social-media you were doing this on an hourly basis).

As MPP West has explained on multiple occasions:

- The information about elastomeric respirators is not hidden. It is available on the Government of Ontario's website and many people are aware of its potential use.

- I realize you are passionate about this type of PPE, but you cannot speak on behalf of other organizations, workplaces, unions or workers. That means you also do not have the authority (or expertise) to determine the type of PPE that anyone else should be wearing or requesting. We are listening to our health experts.

- Elastomeric respirators are, in many cases, a suitable alternative to N95 masks however they also come with their own challenges. For example, before introducing elastomeric respirators into any workplace, a written policy and program must be in place to address fit-testing, employee training, cleaning, disinfection, storage, etc.

- Just because you read about an organization, workplace, union or worker evaluating the potential use of elastomeric respirators does not automatically mean that they are requesting this type of PPE right now – or that they need your assistance in any way. Please allow these organizations to complete their evaluations and to determine their own paths forward.

- Because you are not authorized to represent these workplaces, unions or workers, MPP West is unable to help them through your 3rd Party requests. We are also unable to notify you about the work that we are doing with any of our constituents. Doing so would be a breach of their privacy.

- The majority of constituents and organizations you have mentioned are incredibly capable of advocating for themselves. However, if you believe that any Ontario organization, workplace, union or worker needs help to advocate for this type of PPE, you need to encourage them to contact the Minister of Health and/or their Local MPP directly (for reference, there is a "Find Your Local MPP" search tool on the Ontario Legislative Assembly website: https://www.ola.org/en/members).

In that same regard, MPP West is not your Local MPP. As you can imagine, MPP West, and our office, is incredibly busy helping the residents of Sudbury and Copper Cliff (within the Riding of Sudbury). We look forward to helping any of our Sudbury Riding constituents who need help with this matter. However, we will no longer be responding to you.

Thank you again for your advocacy and please stay safe.

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: January 25, 2021 1:55 PM
To: West-CO, Jamie <JWest-CO@ndp.on.ca>
Cc: Kevin Hedges <kevinhedges.kh@gmail.com>; Mario Possamai <mario.possamai@sympatico.ca>; Simon Smith <sjsmith@kos.net>; Andre Tartre <andretartreCIH@hotmail.com>; Alec Farquhar <afarquhar7@gmail.com>; Dorothy Wigmore <dewwinnipeg@web.ca>; Linda Silas <lsilas@nursesunions.ca>; Geneviève Marchand <Genevieve.Marchand@irsst.qc.ca>; tfrieden@resolvetosavelives.org <tfrieden@resolvetosavelives.org>
Subject: CBC Investigation Into Elastomeric Respirators

Hi Jamie,

I just received this email from CUPE National representative for Health and Safety, Paul Sylvestre. CUPE did reach out to the NDP to explain they think elastomeric respirators are useful and needed. Unfortunately since no politician has yet asked Ford to make sure that misinformation is cleared up, unions and the public often assume the misinformation as fact. CUPE did not know that there are elastomeric respirators with speech diaphragms or improved acoustics built into the design to make communication crystal clear. This is clearly another good example of why a large awareness campaign by the government is essential especially when it comes to clearing up misinformation and describing the different types of elastomeric respirators and how to properly use them. The lack of communication between departments in the government and the lack of Ford explaining why it is better to keep the 100,000 elastomeric respirators in a warehouse than to provide them to health care workers to prevent infections and outbreaks should alarm you on a lot of different levels.

I cc'd some of the countries top experts on elastomeric respirators and their use in a health care setting with this email so please ask them any questions you might have so that you do not continue to make assumptions that your help is not needed and that elastomeric respirators won't make a difference in protecting health care workers. I also CC'd former CDC director from 2009-2017, Tom Frieden so you can understand what impact refusing to use elastomeric respirators and continuing to use surgical masks and reusing N95s will have on a country's pandemic response. Tom is a vocal critic of the US government for refusing to listen to CDC recommendations and put elastomeric respirators into widespread use.

In July, France Gelinas said it was not important to clear up misinformation from government websites about elastomeric respirators being too dangerous to use or ask the government to distribute the stockpile since she assumed health care workers would not want to use them anyways and she has been silent ever since despite knowing how deep and widespread the problems have been surrounding the use of elastomeric respirators. The longer it takes for politicians to go public and ask for the stockpile to be distributed and the problems to be investigated, the harder it will be to eventually stop the spread of the virus and a significant amount of lives will continue to be lost.

Surgical masks and using the same N95 for the entire shift or days at a time is not only dangerous, it is not necessary when there has been enough elastomeric respirators readily available to protect every health care worker in Ontario since July. The dangerous stop gap measures of reusing N95s was because of the short supply and alternatives were not known to be available yet now that alternatives are known and recommended, the government continues to keep standards below minimum acceptable levels of protection because they are familiar with N95s but lack familiarity with elastomeric respirators. The NDP had so many opportunities to speak out early when they knew the government was not using experts to look into using elastomeric respirators when they said no evidence existed they could be used in a health care setting yet the NDP refused to speak out in April and they still won't speak out in January. The NDP is a great party of advocating for the rights of workers but the longer workers rights to stay safe from infection are ignored instead of addressed, the worse the NDPs image will be when the public starts asking why nothing was done to help expose the problems sooner.

Sincerely,

Nicolas

Sent from my iPhone

Begin forwarded message:

From: Paul Sylvestre <psylvestre@cupe.ca>
Date: January 25, 2021 at 12:02:05 PM EST
To: smitnicolas@hotmail.com
Cc: David Hauch <dhauch@cupe.ca>, Dan Pike <dpike@cupe.ca>, Stella Yeadon <syeadon@cupe.ca>, Saranjit Cheema <scheema@cupe.ca>, Andrew Ward <award@cupe.ca>, Doug Allan <dallan@cupe.ca>, Jonah Gindin <jgindin@cupe.ca>, Jo-Ann Breton <jbreton@cupe.ca>
Subject: FW: CBC Investigation Into Elastomeric Respirators

Hello Nicolas,

I briefed Norm Macaskill from the NDP caucus on the use of elastomeric respirators in health care. CUPE supports their use when a comprehensive policy and program is implemented on their selection assessment, use, care, hangling, storage and cleaning.
CUPE agrees that their use will assist in keeping an available stock of N95s in the province. Yet, we also recognize that elastomeric respirators present communication challenges between workers and between workers and patients/residents. Still, we see more advantages than disadvantages as long as workers are adequately trained and supervised. For that reason, CUPE insists that the policies and programs for elastomeric respirators meet or exceed the standards set out in the CAN/CSA-Z94.4-18 Selection, Use and Care Respirators.
I will review your request to support the CBC investigation with our health care sector team.

Regards,

Paul Sylvestre

National Representative - Health and Safety
Ontario Regional Office
80 Commerce Valley Drive E,
Markham, ON, L3T 0B2
T: 289-982-3292
F: 905-739-4001
psylvestre@cupe.ca

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From: Nicolas Smit < >
Sent: January 19, 2021 9:15 AM
To: Paul Sylvestre <psylvestre@cupe.ca>
Subject: CBC Investigation Into Elastomeric Respirators

Hi Paul,

Natalia Goodwin from CBC is starting an investigation into the failures by the government to make sure elastomeric respirators are used and distributed from the stockpile so that health care workers do not have to reuse N95s or elastomeric respirators and continue to be infected. I helped Radio Canada with their investigation into the problem in early December. Michael Hurley, President of the Ontario Council of Hospital Unions, did a great job explaining how health care workers continue to be actively prevented from using them and that the government is fighting against unions and refusing to distribute the stockpile which has resulted in a lack of proper protection among health care workers which has allowed the virus to quickly spread in long term care.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

I have been working to help get elastomeric respirators put into widespread use by hospitals and long term care homes since March. I have also been fighting with the Ontario government since July to distribute the stockpile of 100,000 elastomeric respirators that they bought in June but then quickly decided to warehouse them instead of distributing them. MPP Health Critic France Gelinas told me in July that the government based that decision on the assumption that health care workers would not want them.

Despite unions fighting for months with the government to distribute the respirators they bought for health care workers after recommending them as safe N95 alternatives in May, the government has refused to explain why it is better to keep the respirators on a shelf rather than protecting health care workers from the infection and if the government does not plan to distribute them during a terrible pandemic where outbreak among health care workers are common, when would plan to distribute them.

Misinformation around elastomeric respirators remains common because the government has failed to stop saying the respirators are very dangerous for patients because they have an exhalation valve and because the government has refused to publicly talk. About their recommendations to use them or speak to news organizations so they would know to report on these recommendations. Ontario Health only updated their guidelines on December 21st to include how to safely cover the exhalation valve if source control was needed yet made no public mention and Health Canada still lacks that informing on their recommendations to use elastomeric respirators. This should have been done much sooner since Ontario Health released guidelines on how to use the specific type of elastomeric respirator from their stockpile in October including how to cover the valve but did not make these guidelines available online. I have attached those guidelines with this email.

https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

Health Canada approved Canadian manufacturers of elastomeric respirators without an exhalation valve yet the government continues to make the public assume all elastomeric respirators are all created equal and an exhalation valve and that they all cause problems to properly communicate and are bulky. The government has refused to let anyone know that elastomeric respirators are available with speaking diaphragms or with improved acoustics built into the respirator itself so that health care workers can communicate better than through an N95.

Due to the misinformation the government has refused to address, correct or remove from government websites, the Occupational Health Clinics for Ontario Workers asked me to do a presentation to help clear up the misinformation and talk about the history of elastomeric respirators in health care because Health Canada and politicians kept telling the public during the first wave that no evidence existed which showed elastomeric respirators could be used in a health care setting. Even though the CDC and health care workers have been safely using them since 1996 and the CDC recommended that elastomeric respirators be stockpiled for health care workers to use for an eventual pandemic in 2018, the government used experts that knew nothing about their history or use in health care and did not even bother to do a basic Google search which would have prevented the misinformation from being spread in the first place.

https://www.ohcow.on.ca/edit/files/occ-covid/ohcow_nicolas_smit.pdf

https://www.cbc.ca/news/canada/manitoba/dentists-flock-industrial-masks-1.5557799

This is a USA Article from early April which criticized the failure listen to CDC recommendations to stockpile elastomeric respirators and how the US government had no plans to use them despite the N95 shortage.

https://www.usatoday.com/story/news/nation/2020/04/03/coronavirus-national-stockpile-disposable-n-95-face-masks-reusable-respirator/5118669002/

In April, when I first got the Ontario and Canadian government to look into using elastomeric respirators to protect health care workers, I also turned to the mining industry which helped donate 10,000s of elastomeric respirators to hospitals across Canada but after this Northern Ontario Business article where the politicians that helped me get the government to look into using the respirators said they were dangerous and hard to communicate in because that is what the experts told them, the mining industry no longer wanted to donate them.

https://www.northernontariobusiness.com/amp/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

In July, I spoke to MPPs in a parliamentary committee meeting about putting elastomeric respirators into widespread use in any workplace setting where outbreaks could occur such as hospitals, long term care homes, food plants and factories and that by reducing the spread in key areas, it would also significantly reduce the community spread and hospitalizations and minimize the amount of Covid patients health care workers would face further reducing their chances of getting infected. Despite being told that there were quite a few manufacturers in Canada, the US and Europe available that could each provide enough elastomeric respirators to protect every health care worker in Canada, the politicians were not interested because they assumed elastomeric respirators were dangerous and that reusing N95s and surgical masks were "good enough" and the best option despite health care workers making up 1/5 cases.

https://www.ola.org/en/legislative-business/committees/finance-economic-affairs/parliament-42/transcripts/committee-transcript-2020-jul-13

Sudbury NDP MPP Jamie West is a great advocate and has been trying to get N95s to help prevent the spread in long term care homes and said unions have not yet reached out to him about elastomeric respirators but that he would help them if the did. It could really help if CUPE reached out to Jamie and asked for his and the NDPs assistance not just to get the respirators distributed but also to get the government talk to journalists and hold a press conference so that journalists can write about how elastomeric respirators are safe and how to use them and that it was a mistake when the government said they were too dangerous to use so that health care workers would not continue to be actively prevented from using them.

I hope this information helps and I that CUPE can benefit from the investigation by Natalia Goodwin when it is released and if possible to speak to Natalia about hospitals CUPE knows they are used as well as any problems CUPE has faced in getting N95s and elastomeric respirators used so she could have a more through investigation and detailed article and tv news segment.

Sincerely,

Nicolas Smit

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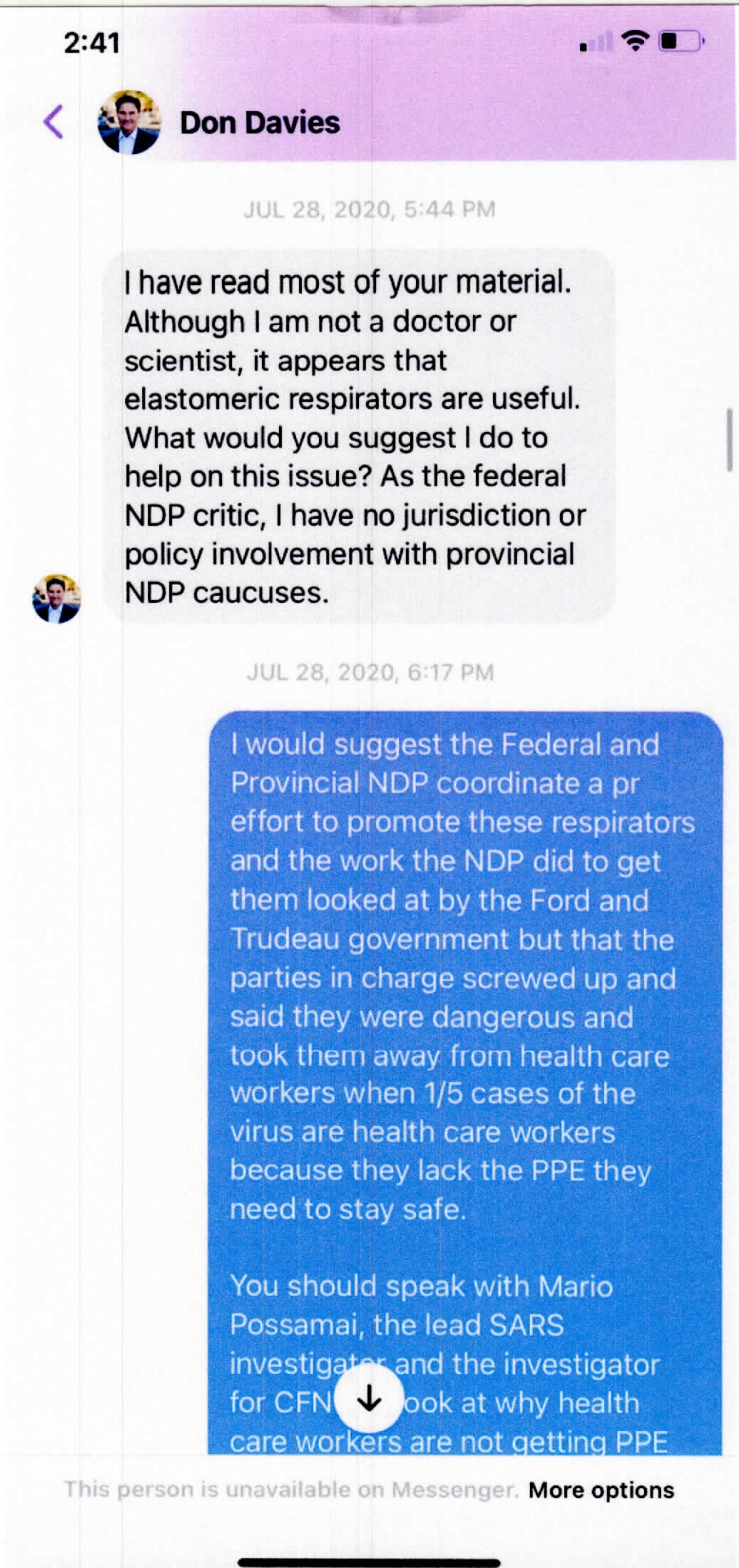
July 28, 2020 Facebook private message from NDP MP Health Critic Don Davies to Nicolas Smit letting Nicolas know he has read most of his materials, believed elastomeric respirators would be helpful to keep people properly protected from being infected and asking Nicolas what he can do to help.

Source: Facebook Messenger private message



JUL 28, 2020, 5:44 PM

I have read most of your material. Although I am not a doctor or scientist, it appears that elastomeric respirators are useful. What would you suggest I do to help on this issue? As the federal NDP critic, I have no jurisdiction or policy involvement with provincial NDP caucuses.

JUL 28, 2020, 6:17 PM

I would suggest the Federal and Provincial NDP coordinate a pr effort to promote these respirators and the work the NDP did to get them looked at by the Ford and Trudeau government but that the parties in charge screwed up and said they were dangerous and took them away from health care workers when 1/5 cases of the virus are health care workers because they lack the PPE they need to stay safe.

You should speak with Mario Possamai, the lead SARS investigat and the investigator for CFN ook at why health care workers are not getting PPE

This person is unavailable on Messenger. **More options**

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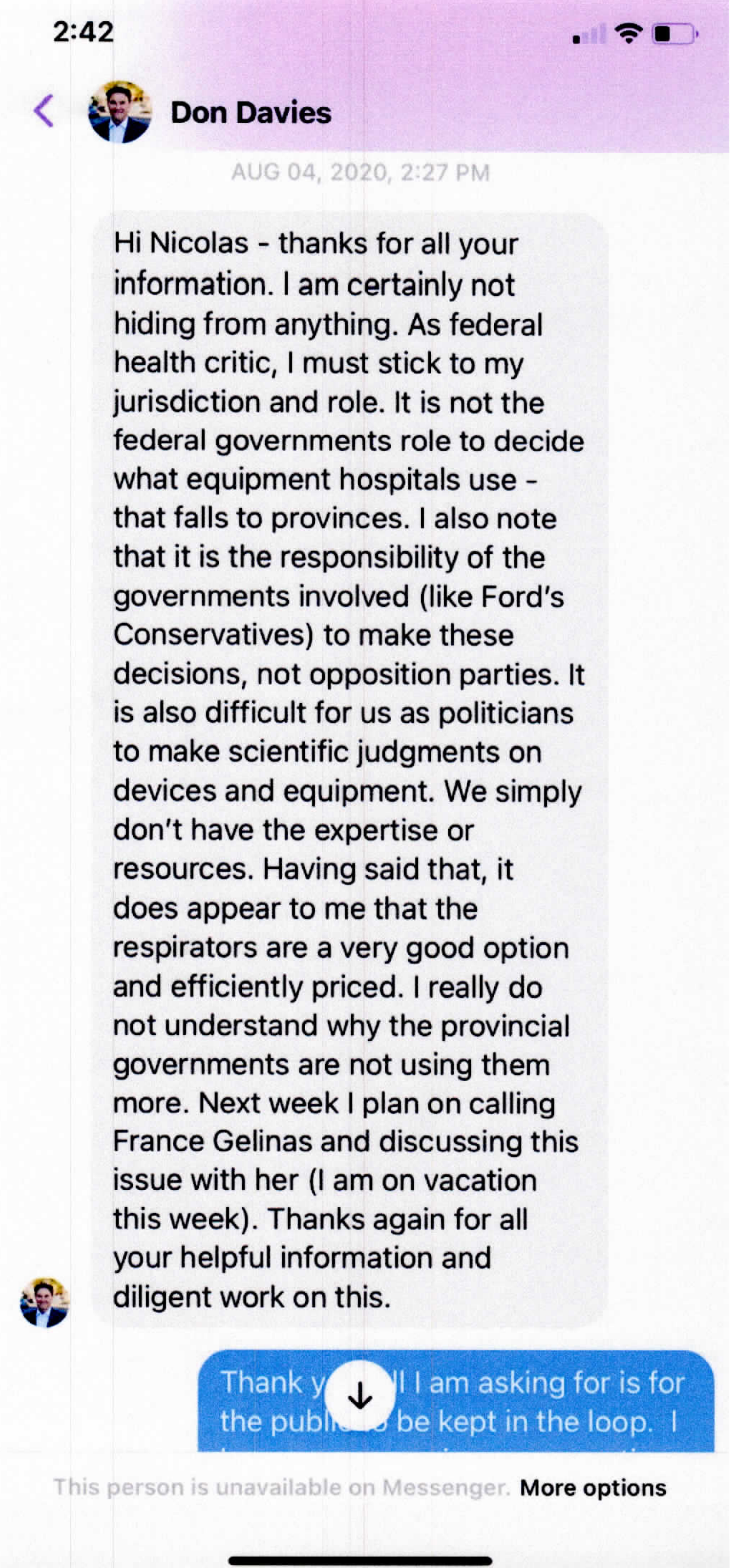
August 4, 2020 Facebook private message from NDP MP Health Critic Don Davies to Nicolas Smit thanking him for sharing valuable information with him about elastomeric respirators and explaining that he didn't understand why the Ontario government wasn't using them, that he planed to speak with NDP MPP France Gelinas about the ongoing negligence and failure by the province of Ontario to use them. Don tries to lay the argument that he cannot speak up publicly about the negligence since it is solely a provincial problem and he cannot speak up about those issues as a federal politician.

Source: Facebook Messenger private message



Don Davies

AUG 04, 2020, 2:27 PM

Hi Nicolas - thanks for all your information. I am certainly not hiding from anything. As federal health critic, I must stick to my jurisdiction and role. It is not the federal governments role to decide what equipment hospitals use - that falls to provinces. I also note that it is the responsibility of the governments involved (like Ford's Conservatives) to make these decisions, not opposition parties. It is also difficult for us as politicians to make scientific judgments on devices and equipment. We simply don't have the expertise or resources. Having said that, it does appear to me that the respirators are a very good option and efficiently priced. I really do not understand why the provincial governments are not using them more. Next week I plan on calling France Gelinas and discussing this issue with her (I am on vacation this week). Thanks again for all your helpful information and diligent work on this.

Thank y ll I am asking for is for the publi be kept in the loop. I

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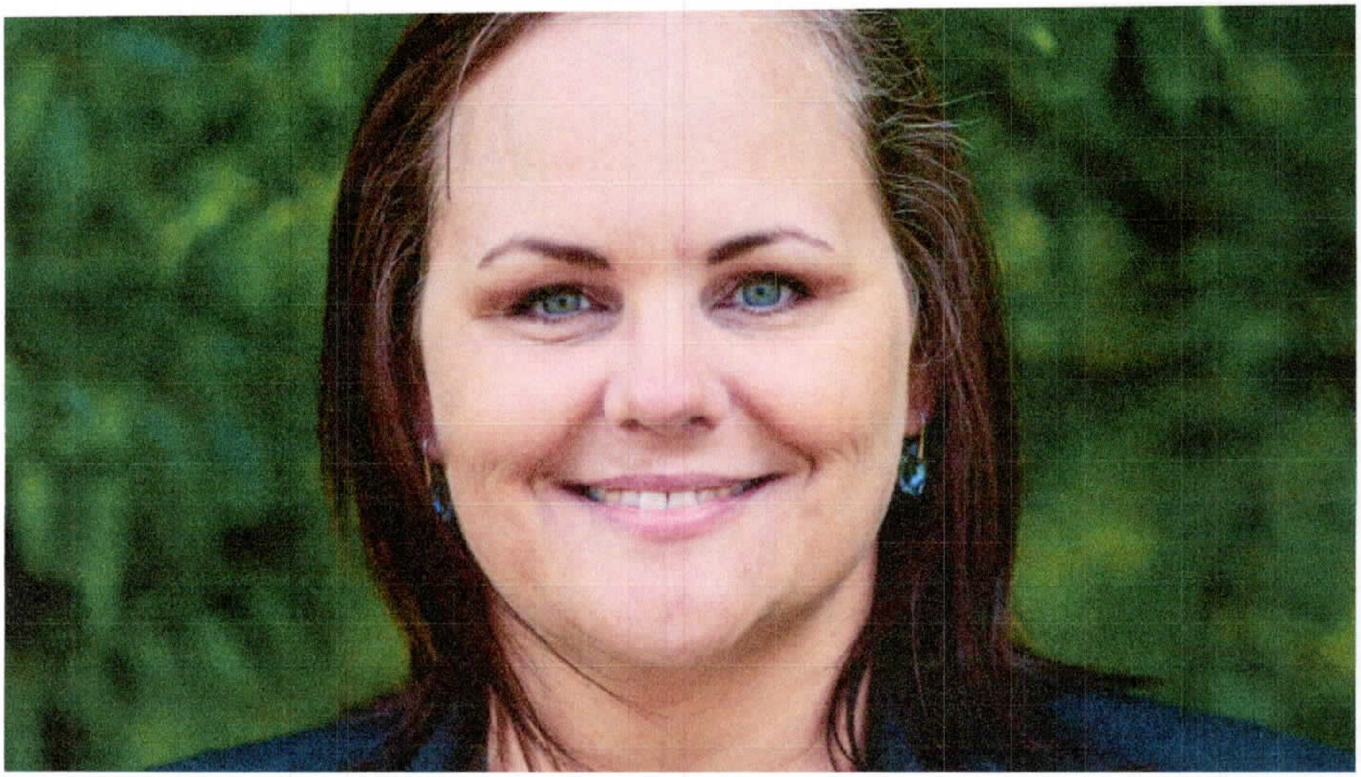
July 18, 2021 Sudbury.com news article about CUPE health and safety specialist Andreane Chenier running as the NDP MP candidate for Nickel Belt in Ontario.

Source: https://www.sudbury.com/local-news/local-ndp-have-now-nominated-federal-candidates-in-both-sudbury-and-nickel-belt-3964283

Local NDP have now nominated federal candidates in both Sudbury and Nickel Belt

CUPE occupational health and safety specialist Andréane Chénier nominated federally for Nickel Belt NDP July 14; former LU prof Nadia Verrelli to run for party in Sudbury

Heidi Ulrichsen Jul 18, 2021 2:45 PM



Andréane Chénier, the NDP's federal candidate for Nickel Belt.Supplied

The local NDP looks to be gearing up for a possible 2021 federal election, with candidates nominated in both Sudbury and Nickel Belt, and an endorsement of the candidates by the Sudbury and District Labour Council this week.

Former Laurentian University political science professor Nadia Verrelli was acclaimed as the NDP's federal candidate in Sudbury last month.

Andréane Chénier, occupational health and safety specialist with CUPE, was also acclaimed in her nomination bid for the NDP in Nickel Belt July 14. Party loyalists met for the nomination via Zoom.

"I am extremely proud and grateful to have been selected to represent the members of the NDP for Nickel Belt, and I am very much looking forward to bringing a strong voice to Ottawa," she said.

If the news is to be believed, "it kind of looks like everybody is campaigning already," Chénier added.

"I'm focusing on reaching out to my neighbours, to my family, to my communities, and just trying to figure out what it is that they want, what it is that they need, and what I can do for them," she said.

Chénier, a mother of two who lives in Hanmer, said she plans to focus on issues such as equitable access to clean drinking water, high-speed internet, building relationships with Indigenous peoples, a living minimum wage and affordable housing.

Sudbury and District Labour Council issued its endorsement of Verrelli and Chénier July 15.

The labour group's president, Jessica Montgomery, was locked out by Care Partners in 2019. The labour dispute came to an end when the company decided to permanently eliminate dozens of jobs in Sudbury.

"I met with the Nickel Belt and Sudbury (Liberal) MPs after Care Partners pulled out of Sudbury and asked them why, why didn't you show up for us?" she said, in a press release.

"Both responded by saying, 'they would do better.' The only ones who show up, the only ones who ever show up and fight for us are the NDP."

The president of Steelworkers Local 6500, a union that's currently on strike against Vale, is also quoted in the press release.

Nick Larochelle said he plans to work closely with the two candidates.

"Something that is important to us is the support from the federal NDP," he said. "We are looking forward to having the Sudbury representative Nadia Verrelli and Nickel Belt representative Andréane Chénier working with us here in the Sudbury region."

Verrelli is one of the Laurentian profs whose positions were eliminated due to the university's ongoing insolvency restructuring.

"When the community began organizing to stop the CCAA cuts and save Arts, French, Italian and Indigenous programming, it was the NDP that showed up," she said, in the press release.

"I am still waiting for a response to my letter to Sudbury's MP. We are looking to address big challenges in the future- reconciliation, a national pharmacare program, climate change- Canadians need help both locally and in Ottawa and Sudbury is not being heard."

Chénier is quoted as saying: "we know the value of union work here. We know it's the best way to keep work healthy and safe and to have good working conditions and wages. That's why an NDP Government will defend the Rand formulae (a feature of Canadian labour law requiring workers covered by collective bargaining contracts to pay union dues), make it easier to join a union and oppose legislation that would interfere with workers' rights to bargain and to strike. We will ban the use of replacement workers.

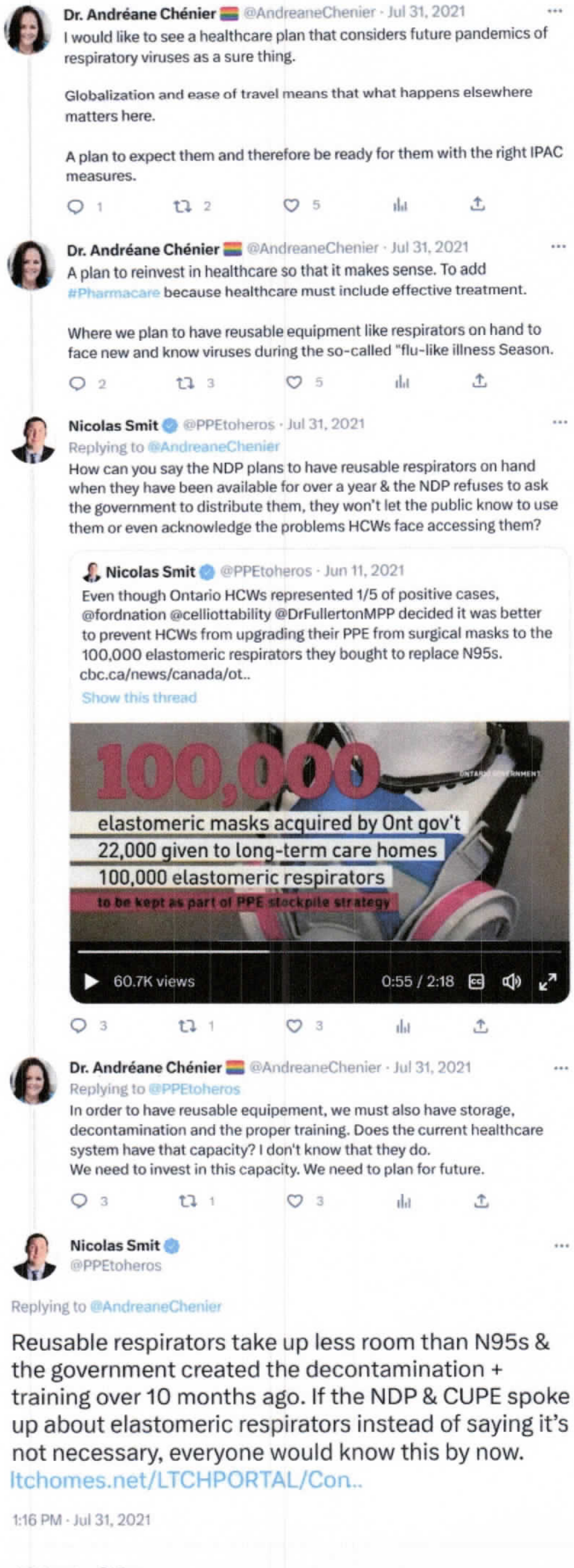
"We've been going through some dark times lately, but the NDP is committed to building a strong, skilled and knowledgeable workforce, ready to face the future. Send me to Ottawa. We are ready to lead."

12

July 31, 2021 tweets by NDP MP candidate and CUPE health and safety specialist Andreane Chenier saying the government will use elastomeric respirators if the NDP party ended up winning a majority during the federal election. When asked why CUPE and the NDP needed to wait for the NDP to win a majority when they had readily available for over a year, Andreane tries to backtrack and say it had been impossible to use elastomeric respirators upto that time because of the lack of storage. Despite CUPE quietly asking for the 100,000 elastomeric respirators to be distributed, Andreane said hospitals lacked the capacity to use them and then after confronted with reality that there was the ability to currently use them, she stopped advocating for the NDP to use elastomeric respirators.

Source:

https://twitter.com/PPEtoheros/status/1421520272478380032?s=20&t=NhTTc4drWyGbXzQBFJR5xQ



Dr. Andréane Chénier 🏳️‍🌈 @AndreaneChenier · Jul 31, 2021

I would like to see a healthcare plan that considers future pandemics of respiratory viruses as a sure thing.

Globalization and ease of travel means that what happens elsewhere matters here.

A plan to expect them and therefore be ready for them with the right IPAC measures.

Dr. Andréane Chénier 🏳️‍🌈 @AndreaneChenier · Jul 31, 2021

A plan to reinvest in healthcare so that it makes sense. To add #Pharmacare because healthcare must include effective treatment.

Where we plan to have reusable equipment like respirators on hand to face new and know viruses during the so-called "flu-like illness Season.

Nicolas Smit @PPEtoheros · Jul 31, 2021

Replying to @AndreaneChenier

How can you say the NDP plans to have reusable respirators on hand when they have been available for over a year & the NDP refuses to ask the government to distribute them, they won't let the public know to use them or even acknowledge the problems HCWs face accessing them?

> **Nicolas Smit** @PPEtoheros · Jun 11, 2021
>
> Even though Ontario HCWs represented 1/5 of positive cases, @fordnation @celliottability @DrFullertonMPP decided it was better to prevent HCWs from upgrading their PPE from surgical masks to the 100,000 elastomeric respirators they bought to replace N95s. cbc.ca/news/canada/ot..
>
> Show this thread

100,000
ONTARIO GOVERNMENT
elastomeric masks acquired by Ont gov't
22,000 given to long-term care homes
100,000 elastomeric respirators
to be kept as part of PPE stockpile strategy
60.7K views
0:55 / 2:18
3
1
3

Dr. Andréane Chénier 🏳️‍🌈 @AndreaneChenier · Jul 31, 2021

Replying to @PPEtoheros

In order to have reusable equipement, we must also have storage, decontamination and the proper training. Does the current healthcare system have that capacity? I don't know that they do.
We need to invest in this capacity. We need to plan for future.

Nicolas Smit
@PPEtoheros

Replying to @AndreaneChenier

Reusable respirators take up less room than N95s & the government created the decontamination + training over 10 months ago. If the NDP & CUPE spoke up about elastomeric respirators instead of saying it's not necessary, everyone would know this by now. ltchomes.net/LTCHPORTAL/Con..

1:16 PM · Jul 31, 2021

1 Retweet **6** Likes

13

April 12, 2022 email by Max Chapman, NDP MPP Mike Mantha's assistant to Nicolas Smit thanking him for keeping Mike up to date on the negligence around elastomeric respirators and for sending him the detailed evidence of the negligence. The information Nicolas shared with Mike is also included in this email.

Source: Email communication

From: **Chapman, Max** MChapman@ndp.on.ca
Subject: **RE: Flagging major problem by IPAC in Ontario Hospitals**
Date: **Apr 12, 2022 at 4:52:34 PM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hi Nicolas,

Thank you for send over this information, I will flag it with the MPP and review it with him as soon as possible.

If there are any questions as we go through this I will reach out to you to point us in the right direction for clarification.

Again, thank you for getting us up to date on this situation.

Best,
Max Chapman

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: April 12, 2022 3:57 PM
To: Chapman, Max <MChapman@ndp.on.ca>
Cc: IPAC-inquiries@hsnsudbury.ca; Simon Smith <sjsmith@kos.net>; lisambrosseau@gmail.com; jvipondmd@gmail.com; mario.possamai@sympatico.ca; Barry <barry@cappem.ca>; Yaneer Bar-Yam <yaneer@necsi.edu>; ericfeiglding@gmail.com; dgiroux@hsnsudbury.ca
Subject: Flagging major problem by IPAC in Ontario Hospitals

! **CAUTION:** External message.

Hi Max,

I wanted to flag a serious problem to MPP Mike Mantha about Ontario hospitals after a conversation I just had with Sudbury's Health Sciences North IPAC team, CC'ed with this email along with HSN president Dominique Giroux.

I have also CC'ed Joe Vipond (from this mornings' meeting), Mario Possamai (lead SARS investigator for Canada who testified at the Ontario ltc commission and in the House of Commons on our government's failed Covid policies), CDC advisor and international PPE expert Lisa Brosseau, Simon Smith (international PPE expert, chair of the CSA working group on biological aerosols & CDC advisor), Yaneer Bar-Yam (founder of the World Health Network), world renowned epidemiologist Eric Feigl-Ding & Barry Hunt who helped Canada create the new PPE standards & testified at last weeks Ontario parliamentary committee meeting.

In my call this afternoon with HSN's IPAC team, they explained that the reason every hospital and ltc home in Ontario is forcing patients to downgrade from a tight fitting respirator like an N95 or elastomeric respirator to a loose fitting surgical mask is due to government policies stating that airborne transmission is not happening in hospitals except for AGMP (aerosol generating medical procedures).

HSN IPAC stated that despite the CDC & Health Canada saying airborne transmission was common & tight fitting masks were needed, since the Ontario government refuses to accept the possibility of airborne transmission outside of medical procedures, the higher levels of protection are banned in hospital settings and only loose fitting surgical masks are allowed.

They said there is no concern by the PHO, IPAC CMOH and others about patients spreading the virus through airborne transmission however hospitals are worried that a patient's N95 or elastomeric respirators could infect others if contaminated & another person touches their respirator.

This makes little sense as they are not concerned about anything else a patient wears such as glasses or clothing being contaminated. If the wearer is infected, taking off the tight fitting respirator will mean they could more easily transmit the virus wherever they go within the hospital plus wherever they take off their respirator to put on a surgical mask all those entering that area are in extreme risk since the virus can remain suspended in the air for hours and infect all the other patients that temporarily go without a mask in order to put on a surgical mask provided by the hospital.

The HSN IPAC team also explained that protecting the wearer from transmission is not part of Ontario's PPE guidelines and that only thing that is being considered by the province is source control where the person tries to prevent the spread to others. Wearing a loose fitting surgical mask vs a tight fitting respirator provides less source control protection even in N95s and elastomeric respirators with exhalation valves as this CDC study explains. N95s and elastomeric respirators protect the wearer AND those around the wearer. Protecting the wearer also means less people get infected and less people that can then transmit the virus to others.

https://www.cdc.gov/niosh/docs/2021-107/default.html

This Guardian news article explains how the Australian government was one of the first countries to discover fleeting transmission where it only takes seconds to infect an individual, not the 15 minutes that is often assumed.

https://www.theguardian.com/australia-news/2021/jun/24/its-in-the-air-you-breathe-what-you-need-to-know-about-sydneys-delta-covid-variant

This CDC poster explains surgical masks should not be used for respiratory protection & that to protect people, N95s or more protective options such as elastomeric respirators are needed.

https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

The CDC has banned the practice of forcing patients to remove N95s to put on a surgical mask which will help greatly reduce hospital acquired transmission.

https://www.politico.com/news/2022/03/24/cdc-updates-covid-19-guidance-to-allow-patients-wear-n95s-00020342

This Toronto Star Sept 2021 article explains that hospital acquired transmission in Ontario hospitals have already caused 860 preventable deaths.

https://www.thestar.com/news/gta/2021/09/15/at-least-860-people-have-died-of-covid-19-in-ontario-hospital-outbreaks-what-we-now-know-about-the-unmitigated-tragedy.html

Not only have Ontario hospitals continued to force patients to downgrade to surgical masks, they are still telling HCWs to use surgical masks around their Covid patients despite surgical masks being banned around suspected/confirmed patients with Covid across the U.S. as this news article explains.

https://khn.org/news/article/labor-department-osha-emergency-rules-protect-health-care-workers-from-covid/amp/

Despite the CDC explaining in July 2021 that vaccines could no longer prevent transmission and N95s masks were needed, this Public Health Ontario IPAC guidelines released a few weeks ago says vaccines are great at preventing transmission and there is no evidence to support HCWs needing to use N95s instead of surgical masks while around Covid patients.

https://www.publichealthontario.ca/-/media/Documents/nCoV/updated-ipac-measures-covid-19.pdf?sc_lang=en

This is the CDC statement explaining how vaccines no longer work to effectively prevent transmission and that masks are needed to prevent it.

https://www.cdc.gov/media/releases/2021/s0730-mmwr-covid-19.html

The practice of actively preventing HCWs from using N95s and elastomeric respirators has long been a concern to unions like this December 2020 Radio Canada investigation explains.

This is a Radio Canada investigation where union leaders and I were interviewed about the impact of HCWs being actively prevented from using elastomeric respirators due to the government refusing to promote the recommendations to use them.

https://ici.radio-canada.ca/amp/1756312/masques-p100-elastomeres-syndicats-sante

Despite the Ontario government refusing to talk about airborne transmission. The CDC and Theresa Tam have long admitted to this happening.

May 2021 CDC

https://www.washingtonpost.com/nation/2021/05/07/coronavirus-covid-live-updates-us/

November 2021 Canada

https://ottawacitizen.com/news/local-news/message-shift-on-airborne-transmission-of-covid-19-seen-as-positive-but-late

Tam explaining the virus can remain suspended in the air we breathe like smoke.

https://twitter.com/cpho_canada/status/1459282062582685702?s=21&t=5WfJLNknvpVJpPC9IMzn1Q

https://twitter.com/cpho_canada/status/1459282064163975178?s=21&t=5WfJLNknvpVJpPC9IMzn1Q

Tam also explained this is why a tight fitting mask is needed.

https://twitter.com/cpho_canada/status/1459282065564872712?s=21&t=5WfJLNknvpVJpPC9IMzn1Q

These outdated policies are not only causing a lot of easily preventable deaths, they are also causing 1000s of HCWs to be infected each week. HSN in Sudbury has so many infections that they have not had a week in 2022 where there wasn't an outbreak at the hospital.

This Sudbury Star Article is a great example of how bad IPAC policies have been in Sudbury. "a total of 204 employees and physicians – who are at home; 142 have tested positive for COVID-19 and 62 have not tested positive but are isolating due to exposure". How can patients get the treatment they need if the hospital is a superspreader location & 100s of HCWs are at home infected & can't perform tests, procedures or life saving surgeries.

https://thesudburystar.com/news/local-news/covid-19-hospitalizations-at-health-sciences-north-breaking-records

I hope Mike can use this information and the experts CC'ed in this email to get the province to immediately update their policies so it stops taking so many lives. Once these policies are updated and HCWs/patients have the proper protections, hospital acquired transmission can be virtually eliminated and we can resume normal operations in our hospitals and ltc environments.

Kind regards,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

July 8, 2022 email to Nicolas Smit by Max Chapman, NDP MPP
Mike Mantha's assistant letting Nicolas know the additional evidence including the direct evidence of a cover up happening with federal Liberal MP's plus the New York Times investigation he was quoted in would be shared with Mike. He also explains the work Mike does in Queens Park won't resume until August.

Source: Email communication

From: **Chapman, Max** MChapman@ndp.on.ca
Subject: **RE: Mike Mantha -NYTs and CBC investigation**
Date: **Jul 8, 2022 at 10:40:41 AM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hi Nicolas,

Sorry for the late reply, we are moving offices right now at Queen's Park and the set up has led to a backlog in communication.

I am passing this info on to MPP Mantha so that he can look it over and have discussions with our caucus. If you have any media requests you can send them to media@ndp.on.ca for follow up.

As I said on the phone, the legislature will be resuming in August and work on committee's and in the house will resume at that point. If you have any questions or information in the meantime please feel free to reach out.

Best,
Max Chapman

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: July 6, 2022 2:10 PM
To: Chapman, Max <MChapman@ndp.on.ca>; Mantha - QP, Michael <MMantha-QP@ndp.on.ca>
Cc: mario.possamai@sympatico.ca; Simon Smith <sjsmith@kos.net>
Subject: Mike Mantha -NYTs and CBC investigation

! **CAUTION:** External message.

Hi Max,

It was a pleasure speaking with you on the phone. Here is the NYTs article that confirms that the majority of HCWs deaths were the result of the government not letting anyone know about the recommendations to use elastomeric respirators and that no one has yet to try and hold the US government accountable.

https://www.nytimes.com/2022/07/03/health/covid-ppe-masks-health-care.html

This CBC investigation was poorly done yet it confirms the Ontario government has 22,000 elastomeric respirators in hospitals but that they locked up the 100,000 elastomeric respirators Ford's office bought in June 2020 from 3M.

https://www.cbc.ca/news/canada/ottawa/ottawa-covid-masks-protection-1.6053953

This is the news video from the CBC investigation.

https://share.icloud.com/photos/0ac_bsgFtcWDdIkZSA_wdheHA

In December 2020, I was interviewed along with union leaders about the harm done by the government refusing to let anyone know about elastomeric respirators.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

In this news video, Michael Hurley confirms the lack of elastomeric respirators being used in ltc homes was why the virus was able to spread so easily and take so many lives.

https://share.icloud.com/photos/038W2kUqVH6UjGLQp_Y-mTS0g

The scandal in Ontario is much worse that what the New York Times wrote about. I've CC'ed Mario Possamai, the lead SARS investigator and who testified at the Ontario long term care commission in Dec 2020 about the province not using elastomeric respirators like they should. Mike can confirm the massive infection toll on HCWs would've never occurred had the stockpile been distributed in July 2020. Mario also wrote several scathing pandemic reports for HCW unions.

I also CC'ed Simon Smith, Canada's top expert on elastomeric respirators. Simon can help Mike understand how elastomeric respirators compare to N95s & confirm that the elastomeric respirators with P100 filters the government bought from 3M in June 2020 had to reason to be locked up for future pandemics as they can be safely reused for years with an annual filter change & offered better protection than the N95s.

This February 2021 news article from Barrie shows hospitals have had to learn by word of mouth including by Ministry of Labor inspectors that elastomeric respirators are not only safe and recommended but also protect a lot better than N95s. As the article shows, hospitals have found out after deadly outbreaks combined with N95 shortages, not before in order to prevent the outbreaks from happening in the first place.

https://www.barrietoday.com/coronavirus-covid-19-local-news/waypoint-reports-fourth-death-as-staff-pleads-for-mpps-help-3318593

This Dec 2021 Auditor General report proves Ford's office also kept the Auditor General in the dark about the purchase and storage costs. Not 1 mention of elastomeric respirators can be found in the report.

https://www.auditor.on.ca/en/content/annualreports/arreports/en21/AR_COV-PPE_en21.pdf

The same thing in this May 2021 Auditors report on PPE purchases by the province.

https://www.auditor.on.ca/en/content/specialreports/specialreports/COVID-19_ch4mgmtexpenditures_en202105.pdf

This tweet is from Whitby Liberal MP Ryan Turnbull confirming the liberals knew people kept dying because this problem was not being fixed or investigated. His quote tweet is me sharing the letter Ontario Liberal Health Critic John Fraser received from Christine Elliot the Minister of Health.

https://mobile.twitter.com/turnbullwhitby/status/1364068590677331969

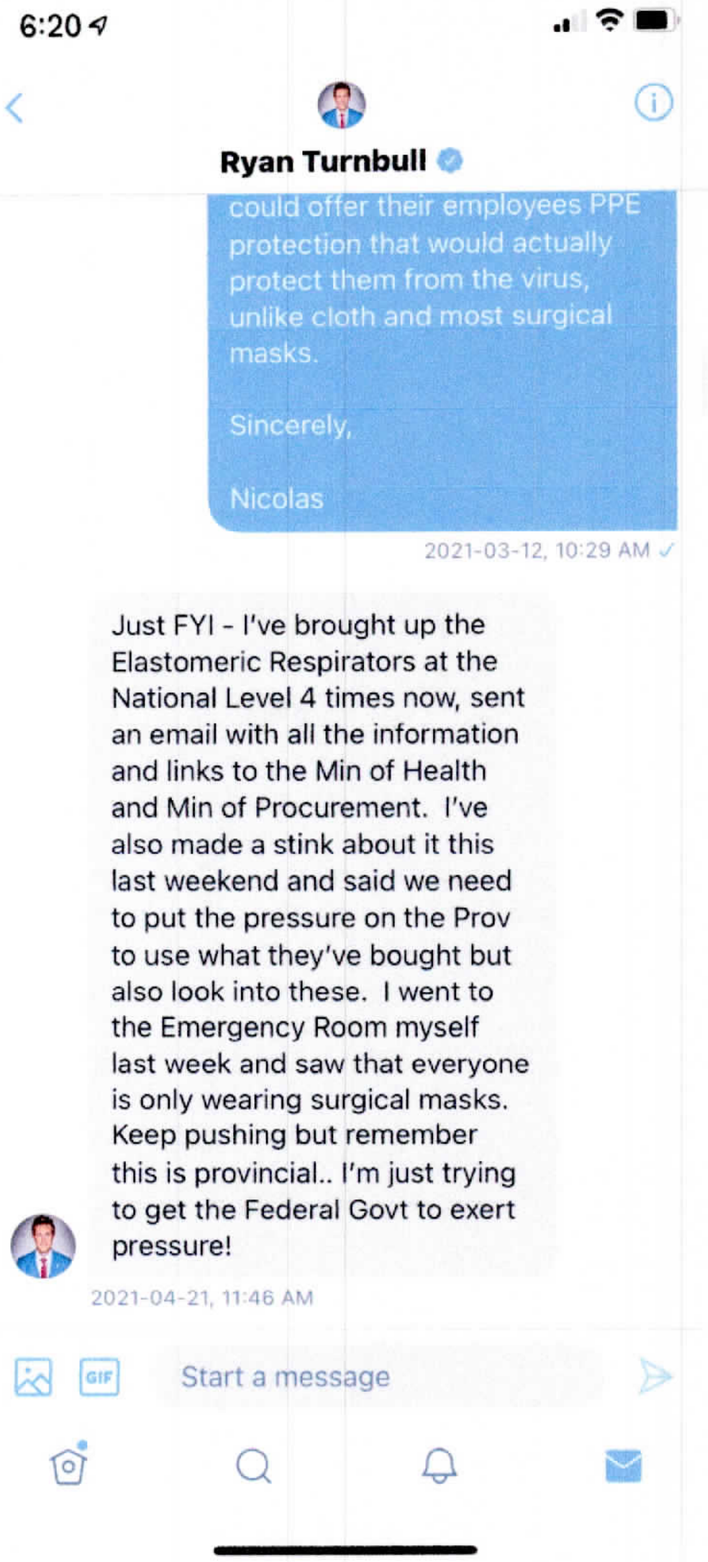
This tweet from Ryan confirms he was in talks with both the federal and provincial Liberals about needing the do something and that they knew they offered better protection than N95s.

https://twitter.com/turnbullwhitby/status/1374736466266492930?s=21&t=ndo10u4TT3l9lFskWuZrHQ

This is Ryan tweets confirming this problem was supposed to be hard for Liberals to ignore and that because something wasn't done sooner, many lives were lost.

https://twitter.com/turnbullwhitby/status/1364064116810387457?s=21&t=ndo10u4TT3l9lFskWuZrHQ

I have attached the PM I received from Ryan confirming he repeatedly spoke to the highest levels of the federal liberal party and that because they refused to come forward, he had to resort to getting his Liberal colleagues to sign an internal letter to pressure the government.



could offer their employees PPE protection that would actually protect them from the virus, unlike cloth and most surgical masks.

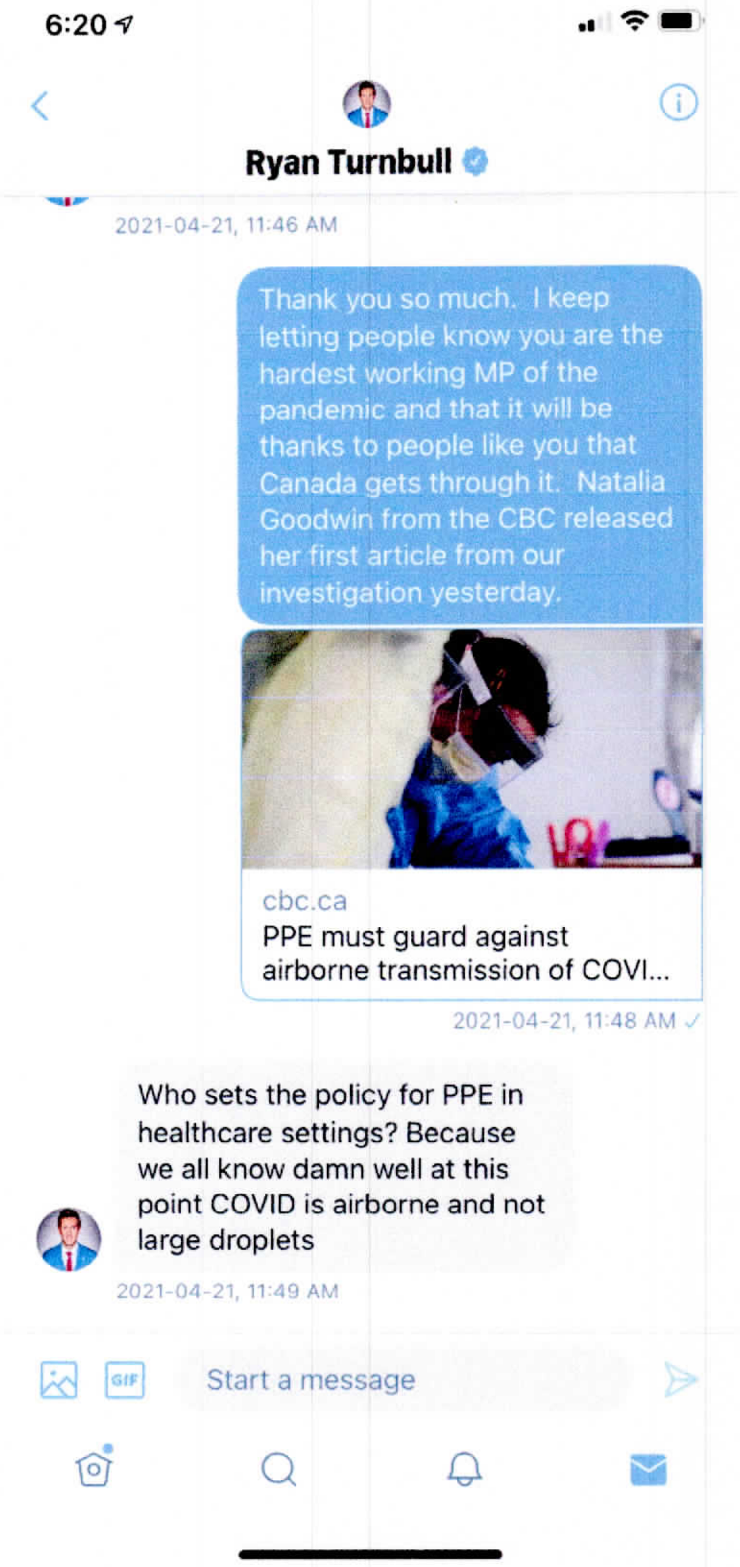
Sincerely,

Nicolas

2021-03-12, 10:29 AM ✓

Just FYI - I've brought up the Elastomeric Respirators at the National Level 4 times now, sent an email with all the information and links to the Min of Health and Min of Procurement. I've also made a stink about it this last weekend and said we need to put the pressure on the Prov to use what they've bought but also look into these. I went to the Emergency Room myself last week and saw that everyone is only wearing surgical masks. Keep pushing but remember this is provincial.. I'm just trying to get the Federal Govt to exert pressure!

2021-04-21, 11:46 AM



Ryan Turnbull

2021-04-21, 11:46 AM

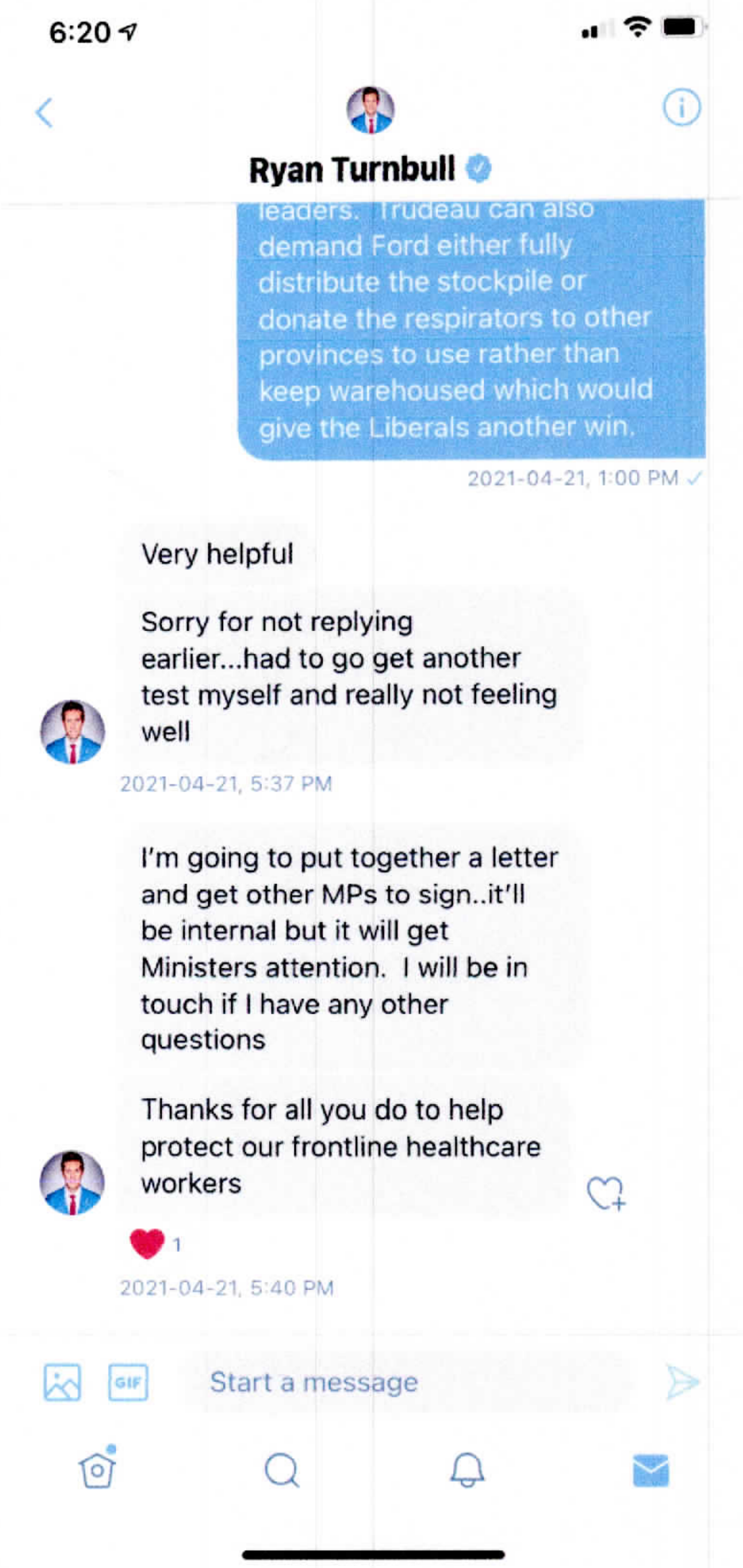
Thank you so much. I keep letting people know you are the hardest working MP of the pandemic and that it will be thanks to people like you that Canada gets through it. Natalia Goodwin from the CBC released her first article from our investigation yesterday.

cbc.ca
PPE must guard against airborne transmission of COVI...

2021-04-21, 11:48 AM ✓

Who sets the policy for PPE in healthcare settings? Because we all know damn well at this point COVID is airborne and not large droplets

2021-04-21, 11:49 AM



Ryan Turnbull

leaders. Trudeau can also demand Ford either fully distribute the stockpile or donate the respirators to other provinces to use rather than keep warehoused which would give the Liberals another win.

2021-04-21, 1:00 PM ✓

Very helpful

Sorry for not replying earlier...had to go get another test myself and really not feeling well

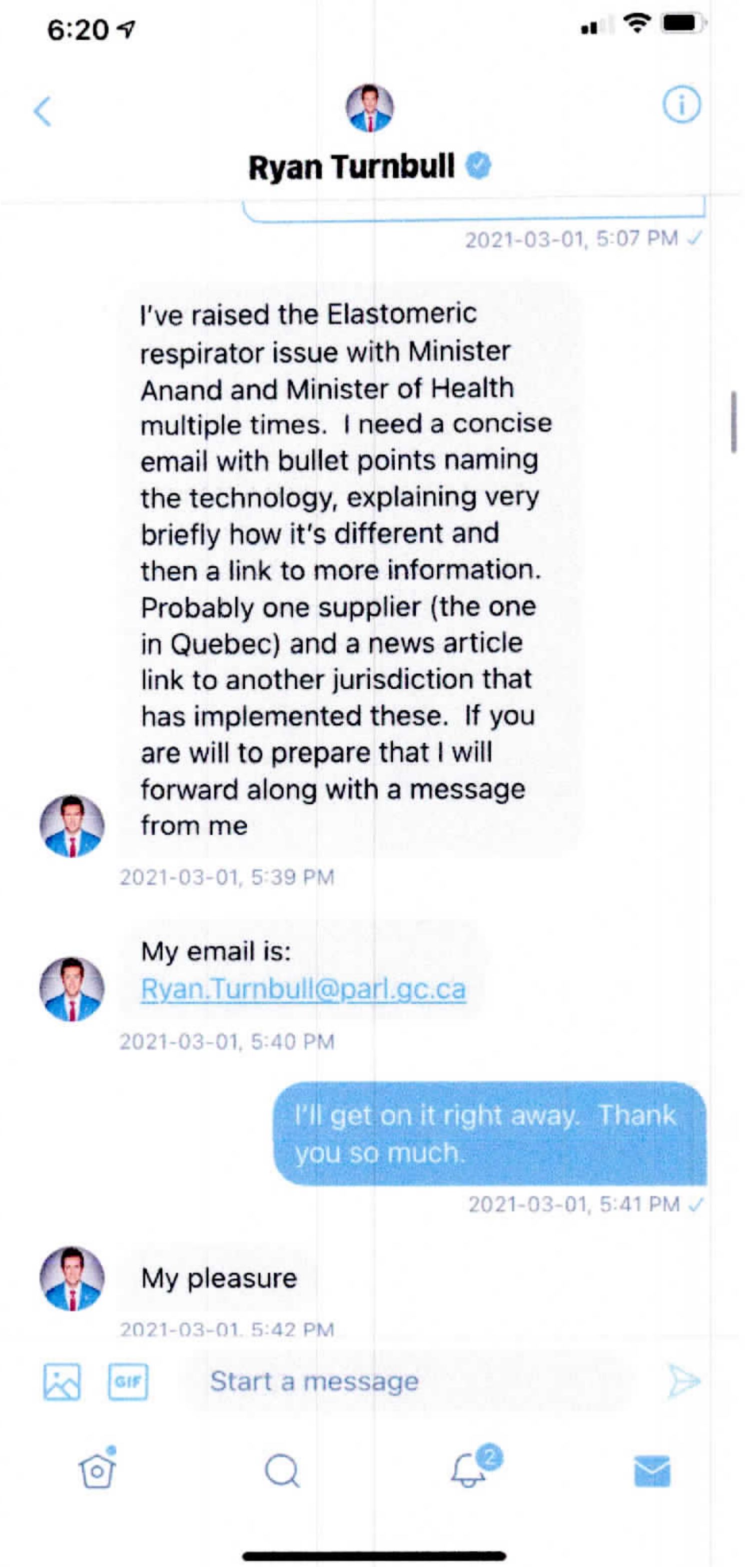
2021-04-21, 5:37 PM

I'm going to put together a letter and get other MPs to sign..it'll be internal but it will get Ministers attention. I will be in touch if I have any other questions

Thanks for all you do to help protect our frontline healthcare workers

❤ 1

2021-04-21, 5:40 PM



2021-03-01, 5:07 PM ✓

I've raised the Elastomeric respirator issue with Minister Anand and Minister of Health multiple times. I need a concise email with bullet points naming the technology, explaining very briefly how it's different and then a link to more information. Probably one supplier (the one in Quebec) and a news article link to another jurisdiction that has implemented these. If you are will to prepare that I will forward along with a message from me

2021-03-01, 5:39 PM

My email is: Ryan.Turnbull@parl.gc.ca

2021-03-01, 5:40 PM

I'll get on it right away. Thank you so much.

2021-03-01, 5:41 PM ✓

My pleasure

2021-03-01, 5:42 PM

I have attached both letters John Fraser received from Christine Elliot and the pdf of the internal investigation launched from Ford's office. The pdf of Ford's internal investigation was also shared with Andrew for the New York Times investigation.

Ministry of Health

Office of the Deputy Premier
and Minister of Health

777 Bay Street, 5th Floor
Toronto ON M7A 1N3
Telephone: 416 327-4300
Facsimile: 416 326-1571
www.ontario.ca/health

Ministère de la Santé

Bureau du vice-premier ministre
et du ministre de la Santé

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www.ontario.ca/sante

Ontario

Response to Written Question No. [illegible]
42nd Parliament, 1st Session
Tabled FEB 18 2021
MB

Sessional Paper No. Q-259

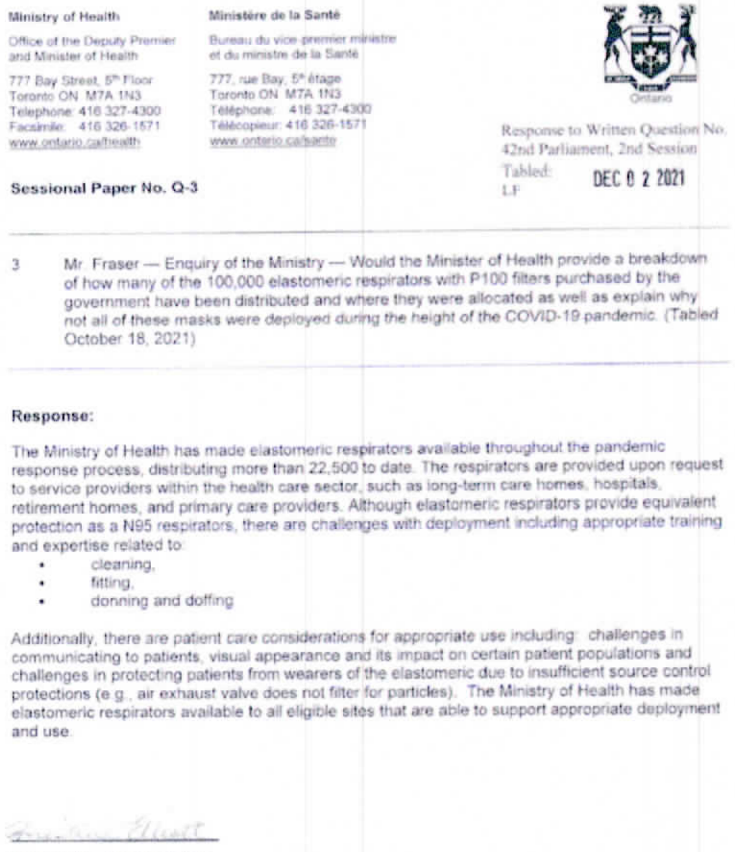
259 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health elaborate on why there has been limited information shared with the public and health officials regarding the purchase and use of 100,000 Elastomeric Respirators with P100 filters and why the public has not yet been informed of their potential use or availability. (Tabled October 27, 2020)

Response:
Our government has made clear that ensuring the health and well-being of Ontarians is our top priority.

Elastomeric respirators have been purchased by our government as part of a collective strategy to ensure preparedness of the health care sector to respond to the COVID-19 Pandemic. It's critical to point out that these are considered by many leading organizations, including the CDC and Ontario Health, as a secondary option in the healthcare sector when there are shortages of disposable N95 respirators. These respirators require a certain level of skill and education to use safely and as such are more appropriate for health care workers and not the general public. Health care partners have been made aware of the availability of these respirators should their organization have the inclination and expertise to deploy these.

Nothing will stop us from protecting those on the frontlines and providing them with all the tools they need to beat this virus.

Honourable Christine Elliott



Ministry of Health

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and Minister of Health

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et du ministre de la Santé

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Response to Written Question No.
42nd Parliament, 2nd Session
Tabled: DEC 0 2 2021
LF

Sessional Paper No. Q-3

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3 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health provide a breakdown of how many of the 100,000 elastomeric respirators with P100 filters purchased by the government have been distributed and where they were allocated as well as explain why not all of these masks were deployed during the height of the COVID-19 pandemic. (Tabled October 18, 2021)

Response:

The Ministry of Health has made elastomeric respirators available throughout the pandemic response process, distributing more than 22,500 to date. The respirators are provided upon request to service providers within the health care sector, such as long-term care homes, hospitals, retirement homes, and primary care providers. Although elastomeric respirators provide equivalent protection as a N95 respirators, there are challenges with deployment including appropriate training and expertise related to:

- cleaning,
- fitting,
- donning and doffing

Additionally, there are patient care considerations for appropriate use including: challenges in communicating to patients, visual appearance and its impact on certain patient populations and challenges in protecting patients from wearers of the elastomeric due to insufficient source control protections (e.g., air exhaust valve does not filter for particles). The Ministry of Health has made elastomeric respirators available to all eligible sites that are able to support appropriate deployment and use.

Elliott

Honourable Christine Elliott

Cheers,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

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15

April 3, 2020 letter NDP MP Carol Hughes sent Minister of
Health Patty Hajdu asking her to get the federal government to look into using elastomeric respirators to help quickly end the PPE shortage healthcare workers were facing.

Source: Letter from NDP MP Carol Hughes to MP Patty Hajdu

HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

House of Commons
Room 960
Valour Building
Ottawa, ON
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Fax : 613-995-6661

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Carol Hughes

MP for Algoma-Manitoulin-Kapuskasing
Députée d'Algoma-Manitoulin-Kapuskasing

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Kapuskasing, ON
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Toll Free/SansFrais:
1-800-920-2057
Tel. : 705-335-5533
Fax : 705-335-2137

April 3, 2020

The Hon. Patty Hajdu
Minister of Health
House of Commons,
Ottawa, ON
K1A 0A6

Dear Minister Hajdu,

RE: Use of P100 Protective Masks and other PPE for Emergency Covid-19 Measures

I've been contacted by Nicolas Smit, a Sudbury-based miner and former executive on the board of the Canadian Institute of Mining, concerning the availability of PPE protective gear.

He believes that P100 mining respirators, such as the 3M 6000, meet the same safety standards as the current N95 masks. At a time where our hospitals, long term care homes and other health facilities are struggling to obtain a supply of PPE's he believes that P100s may "offer better protection" and adds that they "are safe to reuse".

I write to ask if Health Canada is considering the use of the P100 respirators and if not, whether you could ensure that this be investigated further as Nicolas indicates this supply is more readily available, given that these respirators are "common to many industries" and could prove to be an alternative to the N95. It is my understanding that there may already be progress being made in Ontario in testing the P100 respirators as to the viability of using them as an alternative to N95 masks.

I thank you for your attention and trust the department officials at Health Canada will give serious consideration to Nicolas' suggestion. I look forward to your response.

Sincerely,

C Hughes

Carol Hughes, MP
Algoma-Manitoulin-Kapuskasing

16

December 1, 2020 email chain between NDP MPP Carol Hughes and Nicolas Smit. Carol says she will not speak out about the widespread negligence that occurred around elastomeric respirators or apologize for spreading misinformation in news interviews that they are too dangerous to use because she assumed the PPE shortages were over so it would be a waste of time. She said it was good to know there were better options if shortages happened again and that opposition parties only have the power to criticize, suggest or advocate which is exactly what Nicolas was asking her and the NDP to do.

Source: Email communication

From: carol.hughes@parl.gc.ca
Subject: RE: NDP Refusal to Expose PPE Problems
Date: Dec 1, 2020 at 10:40:39 AM
To: smitnicolas@hotmail.com
Cc: dewwinnipeg@web.ca, jwest-co@ndp.on.ca, gelinas-qp@ndp.on.ca, WaddellD@ndp.on.ca, don.davies@parl.gc.ca

Nicolas,

Thank you for your replies.

As noted earlier, New Democrats went through the proper channels to flag this through Health Canada to address your concerns. We've addressed these concerns at both the provincial and federal levels on your behalf. Your advocacy on this front is commendable, and you have shown a great deal of knowledge on issues related to elastomeric respirators. However, at the time of your initial advocacy on this front, there were serious concerns about the availability of PPE, including N95 masks. Those concerns about PPE shortages are now functionally resolved as far as I am aware.

One thing that I meant to highlight in my earlier e-mail was that Ontario Health has approved and recommended elastomeric respirators as a safe **alternative** to N-95 masks. They can certainly be used as an alternative, but Health Canada and Ontario Health do not recommend them as a replacement for N-95s. Some nurses have noted the difficulties in using these masks as an alternative, as they require extensive maintenance on the part of the user, including cleaning and disinfection of the facepiece components such as straps, valves, and valve covers.

I do want to note further that, while I and my NDP and ONDP colleagues are happy to flag the potential of these masks to Health Canada and Ontario Health, we are not scientists or health care professionals and are not privy to the extensive rigours of testing that allow for their approval and recommendation for use by hospital staff and the general public, hence the reason why I sent you the link in my previous email so that those in the industry who wish to have their masks tested and considered can go through the proper process.

No doubt you will agree that it is imperative that we follow the best recommendations provided by these organizations when it comes to the efficacy of PPE.

In closing it is also important to remember that although the federal & provincial governments make the recommendations as to the acceptable PPE guidelines, it is up to the administration in health care facilities and in other facilities/industries that require PPEs to determine which types they wish to purchase based on their workplace requirements.

Thank you again,

Carol Hughes, MP

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: November 26, 2020 3:45 PM
To: Nicolas Smit <Smitnicolas@hotmail.com>
Cc: Hughes, Carol - M.P. <carol.hughes@parl.gc.ca>; dewwinnipeg@web.ca; JWest-CO@ndp.on.ca; gelinas-qp@ndp.on.ca; WaddellD@ndp.on.ca; Davies, Don - M.P. <don.davies@parl.gc.ca>
Subject: Re: NDP Refusal to Expose PPE Problems

Hi Carol,

Thank you for the email. I apologize for the combative tone I have used in the past. The reason I had been using a combative tone with the NDP is because in April I begged the NDP to criticize Ford for letting the public believe no evidence existed that elastomeric respirators could be safely used in a health care setting and France said there was no need to criticize Ford or let the public know the government was spreading misinformation. I also explained to the NDP that because the government was saying elastomeric respirators were too dangerous to use because of the exhalation valve issue that they should advocate for the government to clear up the misinformation so that health care workers would not be actively prevented from using them and so companies would keep donating them yet the NDP said there was no point or benefit to doing this. France Gelinas said that while the approval process was plagued with mistakes, she would not say anything publicly until after the approval process was done.

In May, two weeks after Ontario Health updated their PPE guidelines to recommend elastomeric respirators. These recommendations were not shared with the provincial Covid task force and France told me the government decided they would not keep looking into using elastomeric respirators to protect health care workers but in the future, she would let me know if they ever changed their minds. I told her it was important for her to speak with journalists or criticize Ford so the problems could be investigated and fixed yet France refused to criticize, advocate or make any suggestions and even though she said she would say something at the end of the approval process she decided to say nothing.

The day after she told me it was not worth it to criticize Ford or speak with journalists, Angie Bonenfant's article about Health Canada starting the approval process and that a lot of paramedics were using elastomeric respirators was enough for France Gelinas to send me a congratulatory message for finally getting them approved but now she wanted to wait until the Healh Canada guidelines came out to say anything.

In late June, France let me know before Doug Ford'a office did about the purchase of 100,000 elastomeric respirators yet even then France and the NDP refused to criticize, advocate or suggest. Weeks later, when the government received 100,000 elastomeric respirators, France told me the government decided health care workers did not want to use elastomeric respirators so they would be warehoused instead of distributed. I explained that this was a dangerous assumption since health care unions had been asking for elastomeric respirators since April and that France should criticize Ford for making such false assumptions and storing PPE when the government knew there was a severe problem with PPE shortages but she said it was not worth it and she again refused to speak to the press.

I then reached out to Don Davies who told me he looked into elastomeric respirators and did not understand why the government wasn't saying anything publicly about them or advocating for their use but that he would say something after speaking to France Gelinas about it. A week later, he suddenly changed his tune and said he was not a doctor or scientist so could not share the Health Canada, Ontario Health or CDC guidelines, he could not share the New York Times article or other news articles about their use and he refused to criticize Trudeau or anyone for failing to let the public know elastomeric respirators were safe, approved, recommended and available.

In August when CTV News wrote an article saying people should avoid any mask or respirator with a valve because they were too dangerous to use and cited Health Canada and Ontario Health websites as evidence, I again reached out to the NDP in hopes they would use their powers to critique Ford and Trudeau for failing to remove misinformation from government websites, I asked for the NDP to suggest the government hold a press conference since a large portion of the public continued to believe elastomeric respirators were dangerous, and I asked the NDP to go to news organizations so they could fix their articles and report on the problems around elastomeric respirators and they refused.

In October when CFNU and lead SARS investigator released their 187 page investigation saying the government should stop telling the public N95s are the end all solution and to start providing elastomeric respirators to health care workers as soon as possible, I again reached out to the NDP and again the NDP refused to do anything.

I'm sorry for the combative tone I took but I kept seeing health care workers get infected and die and the NDP refusing to say anything except reasons why it was not important to hold Ford accountable or let the public know about any of the problems. Now that the NDP or at least Jamie is starting to help, I will no longer use a combative tone or blame the NDP.

The government already has the respirators so they do not need to spend money on buying more, they just need to distribute them. The government also has to make sure the public understands that elastomeric respirators should not be feared and how to properly use, clean and maintain them.

Sincerely,

Nicolas

Sent from my iPhone

> On Nov 26, 2020, at 3:41 PM, Nicolas Smit <Smitnicolas@hotmail.com> wrote:
>
> Hi Carol,
>
> Thank you for the email. I apologize for the combative tone I have used in the past. The reason I had been using a combative tone with the NDP is because in April I begged the NDP to criticize Ford for letting the public believe no evidence existed that elastomeric respirators could be safely used in a health care setting and France said there was no need to criticize Ford or let the public know the government was spreading misinformation. I also explained to the NDP that because the government was saying elastomeric respirators were too dangerous to use because of the exhalation valve issue that they should advocate for the government to clear up the misinformation so that health care workers would not be actively prevented from using them and so companies would keep donating them yet the NDP said there was no point or benefit to doing this. France Gelinas said that while the approval process was plagued with mistakes, she would not say anything publicly until after the approval process was done.
>
> In May, two weeks after Ontario Health updated their PPE guidelines to recommend elastomeric respirators. These recommendations were not shared with the provincial Covid task force and France told me the government decided they would not keep looking into using elastomeric respirators to protect health care workers but in the future, she would let me know if they ever changed their minds. I told her it was important for her to speak with journalists or criticize Ford so the problems could be investigated and fixed yet France refused to

criticize, advocate or make any suggestions and even though she said she would say something at the end of the approval process she decided to say nothing.

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I then reached out to Don Davies who told me he looked into elastomeric respirators and did not understand why the government wasn't saying anything publicly about them or advocating for their use but that he would say something after speaking to France Gelinas about it. A week later, he suddenly changed his tune and said he was not a doctor or scientist so could not share the Health Canada, Ontario Health or CDC guidelines, he could not share the New York Times article or other news articles about their use and he refused to criticize Trudeau or anyone for failing to let the public know elastomeric respirators were safe, approved, recommended and available.

In August when CTV News wrote an article saying people should avoid any mask or respirator with a valve because they were too dangerous to use and cited Health Canada and Ontario Health websites as evidence, I again reached out to the NDP in hopes they would use their powers to critique Ford and Trudeau for failing to remove misinformation from government websites, I asked for the NDP to suggest the government hold a press conference since a large portion of the public continued to believe elastomeric respirators were dangerous, and I asked the NDP to go to news organizations so they could fix their articles and report on the problems around elastomeric respirators and they refused.

In October when CFNU and lead SARS investigator released their 187 page investigation saying the government should stop telling the public N95s are the end all solution and to start providing elastomeric respirators to health care workers as soon as possible, I again reached out to the NDP and again the NDP refused to do anything.

I'm sorry for the combative tone I took but I kept seeing health care workers get infected and die and the NDP refusing to say anything except reasons why it was not important to hold Ford accountable or let the public know about any of the problems. Now that the NDP or at least Jamie is starting to help, I will no longer use a combative tone

Sent from my iPhone

On Nov 26, 2020, at 2:45 PM, carol.hughes@parl.gc.ca wrote:

Dear Nic,

Thank you for sharing your message to provincial New Democrat MPPs with me. While you are clearly motivated to do your best to improve pandemic preparedness, I am worried you are expecting more of the opposition than you are of the government in this instance and remind you that opposition parties have the power to critique, suggest, and advocate, but do not have budgetary capabilities.

Your passion is obvious and the need to explore all avenues to secure PPE as the pandemic set in was timely and important. Since then, many streams of production for PPE have been set up and, as you noted in your message to Mr. West, Ontario Health has approved and recommended elastomeric respirators as a safe alternative to N-95 masks.

I am including the following link https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/medical-masks-respirators/authorization.html that may be of assistance to companies wishing to have their product authorized as medical masks and respirators. I forward you this given that information obtained on the Health Canada website indicates that "Industrial respirators available to the general public and not governed by Ministry of Labour regulations are designed for use in industrial settings."

It is also important to note that we have reached a point where the critical shortages incurred in the earliest days of the pandemic have been. for the most part, responded to by companies either through new ventures or by the retooling of businesses. As an example a First Nation business initiative has seen them join force with a company who has created three separate production lines which are currently producing 1 million N-95 masks a day. Two of these production facilities are located in First Nation communities within the riding of Algoma-Manitoulin-Kapuskasing.

Finally, I encourage you to take a less combative tone with those you are seeking to work with or receive assistance from, remembering that, in addition to work in legislative capacities, these representatives have been serving tens of thousands of constituents, many of whom require immediate assistance due to the myriad of negative outcomes the pandemic has caused. I don't want to dissuade your efforts in any way, only to remind you of the multiple considerations these individuals balance at any time.

I thank you for your passion and work on this issue. It is good to know that we have even more alternative options should a shortage occur again.

Sincerely,

Carol Hughes

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: November 23, 2020 1:06 PM
To: JWest-CO@ndp.on.ca; gelinas-qp@ndp.on.ca; Damien Waddell <WaddellD@ndp.on.ca>; Davies, Don - M.P. <don.davies@parl.gc.ca>; Hughes, Carol - M.P. <carol.hughes@parl.gc.ca>
Cc: Dorothy Wigmore <dewwinnipeg@web.ca>
Subject: NDP Refusal to Expose PPE Problems

Hi Jamie,

It has now been over two months since I have reached out to you and your team to expose the scandal of Ford's government refusing to let the public know that Ontario Health has approved and recommended elastomeric respirators as a safe alternative as well as their refusal to distribute any of the 100,000 elastomeric respirators from their stockpile. While you refuse to even ask Ford to hold a press briefing to let the public know about Ontario Health's PPE recommendations to use elastomeric respirators as a safe N95 alternative, I have been able to get Ontario Health critic and MPP John Frasier to investigate. John's question to the Minister of Health about this negligence can be found on page 52.

https://www.ola.org/sites/default/files/node-files/house/document/pdf/2020/2020-11/211_November_23_2020_Orders_1.pdf

While Ontario Health refuses to even let the public know elastomeric respirators are safe and available, cities like New York have stopped buying N95s for the first responders and are now only buying elastomeric respirators.

https://www.nydailynews.com/new-york/ny-fdny-new-covid-mask-protection-20201110-7ehwdcduwffcni3qigd2vp6dla-story.html

While Ontario Health put up their PPE guidelines online to recommend elastomeric respirators as a safe alternative to N95s, Manitoba's Shared Health and the CDC put their guidelines on how health care workers can safely use, clean and maintain elastomeric respirators.

https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

https://sharedhealthmb.ca/files/covid-19-reuse-of-elastomeric-respirators.pdf

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

Once this problem is exposed to the public, I will provide my emails and messages from the NDP and members like France Gelinas who have refused every opportunity to clear up misinformation they released about elastomeric respirators being dangerous. I will also provide emails and phone logs to politicians such as yourself to show that France was not the only NDP politician that refused to take basic steps to help health care workers and the public know about PPE that could have been distributed to ltc homes in July to prevent the outbreaks and mass health care worker infections we are now seeing. Because France and the NDP have refused to expose the problem to the public and make sure everyone knows elastomeric respirators are safe, mining companies have stopped donating them to hospitals since they assume they are dangerous. If you would have spoken to Samantha Espley, the Canadian president of the Canadian Institute of Mining, she could have let you know the damage that was done when France explained no evidence existed that proved they could be safely used in a health care setting.

https://www.sudbury.com/local-news/sudbury-engineer-urging-mining-industry-to-donate-respirators-2278016

I will make sure that politicians that refused to help will be held accountable not only for their actions but also their inactions.

Sincerely,

Nicolas Smit

Sent from my iPhone

October 17, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit explaining the NDP did not think it worth speaking up about the negligence around elastomeric respirators during Question Period since Doug Ford would likely refuse to answer questions the NDP would ask about it. The email goes on to say there's no point holding a press conference to alert the public and ask for investigations since Doug Ford would say no to an investigation. The email also states that it wouldn't be worth asking the federal NDP to ask for investigations for the negligence by the federal government since Justin Trudeau would say no to investigations as well and that the only thing Nicolas could really do was file a police report if he wanted the police to investigate the criminal negligence that occurred. The chain of emails also shows how Ms Wong-Tam's office believed Covid was airborne, that masks saved lives and that people in long term care died as a result of proper masks not being sent to long term care homes.

Source: Email communication

From: **Wong-Tam-QP, Kristyn** KWong-Tam-QP@ndp.on.ca
Subject: **Re: Thank you - forms being filled .....Sat Sept 3rd | Met you at St. Jamestown Festival**
Date: **Oct 17, 2022 at 10:33:48 PM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hello Nicolas,

Are you free to meet via zoom at 4pm this Wednesday?

I will answer your suggestions:

1. Regarding Kristyn asking Ford in Question Period. Ford dodged this question when thousands of seniors were dying. He will refer the question to his house leader Paul Calandra who will not answer the question. I would strongly recommend a written question which is still a matter of public record. It will be more substantive, but they will say no and that their inquiry was adequate. I am sorry for being a pessimist, but I am assuming you would appreciate frankness.
2. Regarding a press conference: The NDP did that so so so many times throughout the pandemic. Ford will say no to an investigation. I am emotionally supportive of this strategy, but strategically I've seen it fail. I'm really sorry. I would feel like I was asking families to retraumatize themselves, given the low likelihood of success. It is also significantly outside MPP Wong-Tam's critic portfolios, making coordinating it complicated.
3. Health Canada will not do an investigation beyond what Trudeau has committed to. The Federal Government will not aggressively step in to shame the Provincial government in this manner. We cannot guarantee that the Federal NDP elevate this issue to the status of concern that justifies breaking the supply and confidence agreement. Again, I'm sorry but I do not believe this is a realistic ask in the current political climate with Alberta on the cusp of provoking a constitutional crisis over intergovernmental jurisdiction.
4. Regarding the asks in your next points. What you are asking for is fundamentally a police investigation. You are allowed to write to the police requesting an investigation, and you are entitled to appeal their decline to investigate. The laws around this are all anemic at best. They have been asked to consider and they have made their choice. They are not adequately accountable when they make the wrong choice.

I really do understand what you are trying to do what you are trying to do. I am not trying to be a debby-downer by any means. I do not think justice will be won through the courts, and I think you deserve my honesty about that. In a perfect world yes. In this one....

Benjamin Donato-Woodger
Pronouns: He/Him | C: 416.209.6322

Executive Assistant
Office of MPP Kristyn Wong-Tam – **Toronto Centre**
401 – 120 Carlton St. | Toronto ON, M5A 3Z2
Office : 416.972.7683 | kwt-co@ndp.on.ca

> On Oct 16, 2022, 9:18 PM -0400, Nicolas Smit <nicolas@ammaunited.org>, wrote:
> Hello Ben,
>
> Sorry to hear about what you had to go through. I have been trying to flag overlooked negligence that could've prevented deaths like your grandmothers for years but things have kept falling through the cracks so they continue. With the help of the NDP, there can finally be accountability for deaths like your grandmothers. I have direct evidence that can easily be used to force government investigations and get answers into why so many people were needlessly left in harms way which is why I would still like to meet with her as soon as possible.
>
> With my evidence and testimony, MPP Wong-Tam will be able to have accountability for the countless deaths and also be able to get significant safety improvements for HCWs that will help end the majority of HCW shortages due to infections plus prevent the collapse of the health care system. She will single-handedly be able to do so much and bring to light so many overlooked failures that voters will be calling for her to be the next Premier.
>
> A great example of overlooked negligence. To stop investigations into the worst of the government's negligence, Ford hid the purchase of a massive HCW PPE stockpile bought from 3M in June 2020 from the Auditor General. This stockpile was bought after I flagged negligence to Fords office and I can provide evidence of its purchase, that Ford's office plans were originally to immediately distribute them and that it was not included in either of the Auditor General's reports on PPE expenses launched 12 and 18 months later.
>
> Had it been included in the report, the Auditor would have discovered that the province needlessly spent money to keep PPE locked up that would've prevented 10,000s of HCW and ltc worker infections. Had the Auditor recommended the respirators be sent to hospitals and ltc as originally planned, it would've prevented the need to spend over $100 million on PPE with inferior protection after the Auditor's reports came out so even those that only care about wasted tax payer dollars with care about this scandal.

This December 2020 Radio Canada investigation is a great example of things falling through the cracks after I flagged them. Union leaders and I originally flagged a major problem around the government failing in their duty to inform workers about important Ontario Health recommendations to use elastomeric respirators as reusable N95 alternatives. Since the government did not want to promote their Ontario Health recommendations to use elastomeric respirators as N95 alternatives and kept spreading misinformation that only N95s and KN95s could stop transmission, even HCWs that bought their own elastomeric respirators weren't allowed to use them because hospitals assumed they were banned and therefore told HCWs to use surgical masks instead.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

I also flagged that the government failed in their duty to protect workers but this was overlooked so nobody has yet been held accountable and workplace investigations have yet to start despite there being a lot of preventable workplace deaths and permanent disabilities due to long covid. In December 2020, while the NDP was flagging to the province that ltc homes hadn't had N95s for 6 months even during deadly outbreaks, I was flagging how the province could have protected every ltc home employee and HCW with N95 level protection they readily available but was locked up.

As this news article shows, even several waves in, hospitals had to learn about elastomeric respirators from word of mouth. It was only because Ministry of Labor inspectors visited this hospital experiencing multiple deaths in an outbreak along with N95 shortages and HCWs begging for PPE on social media that the hospital learned about elastomeric respirators. Why did they have to learn in an outbreak that they offered superior protection to N95s, were recommended by Ontario Health and would prevent N95 shortages like they were experiencing from happening. The province had enough of these respirators to eliminate N95 shortages since the 1st wave so any worker who was denied N95 level protection when needed has a case against the government once this problem is brought to light.

https://www.barrietoday.com/coronavirus-covid-19-local-news/waypoint-reports-fourth-death-as-staff-pleads-for-mpps-help-3318593

I explained for over 2 years how there was no reason to lock up the stockpile as the respirators provided better protection for the wearer than N95s and was better for source control than surgical masks, were safely used by HCWs since the 90s and were made to be safely reused for decades. It was also not in short supply so if more were needed in the future, more could've been purchased including HCW versions instead of the industrials ones the province bought. The province confirmed they could protect HCWs from infections while surgical masks couldn't but the province pushed surgical masks on HCWs and never let them know elastomeric respirators were even an option.

Most of this Radio Canada news video is in French however union leader Micheal Hurley's interview is in English and he explains that the failure to use elastomeric respirators was one of the biggest reasons the virus was able to spread so easily through a long term care environments.

https://www.icloud.com/photos/#035WFytFyRRLAjPR5XZQKQ5Yw

If you read the Ontario Long Term Care Commission transcript from December 16 2020 of the interview with lead SARS investigator Mario Possamai, you will also see the failure to use elastomeric respirators was flagged during the commission investigation.

I believe there are several simple things MPP Wong-Tam can do that will launch large scale investigations Doug Ford won't be able to prevent and will have the biggest impact on ending transmission in ltc and healthcare settings.

-MPP Tam needs to ask for investigations in parliament so it is on the record she asked and Ford denied the possibility. Since this problem is not well known or understood by anyone including journalists, its not being covered in the news. If Ford agrees to an investigation then it's an easy win and would be covered in the press without the need to do much more. She can also ask for Ford to explain the benefit to locking up the stockpile and not making sure hospitals knew to use them since the N95 shortage caused everyone to assume workers needed to downgrade protections and created so many ER and ICUs to close down.

-Before parliament resumes, the NDP can hold a press conference with journalists, families members such as yourself that lost loved ones due to Ford not trying to prevent transmission in ltc, families of HCWs that died, HCWs with permanent disabilities from Covid including the PSW from Roberta Bondar Place ltc home in Barrie who got infected during a large outbreak at the home and had to get a double lung transplant. Mario Possamai the lead SARS Investigator can also lead the press conference to explain the impact using the stockpile could've had. At this press conference, the NDP can lay out all the evidence I have provided as well as any additional evidence they will find while doing their due diligence investigating the negligence. At this press conference the NDP can ask journalists to investigate what Ford doesn't want investigated and this can uncover even more that is yet to be known.

-If Ford doesn't agree to an investigation and even if he does, MPP Wong-Tam can ask for a federal investigation since Health Canada and the Liberals also were involved in negligence and a cover up. Trudeau will likely try and prevent an investigation but with the partnership the NDP has with the Liberals, they can push for a public inquiry. The Liberals will likely try and prevent any investigations as one of the things that will come out from the investigation is the work I did with a Liberal MP from Feb-April 2021. I will share evidence with your office that this MP repeatedly spoke to the Minister of Health, Minister of Procurement, his caucus, the Ontario Liberals and others about the need to come forward and expose the negligence around elastomeric respirators plus make sure people would know to use them. He went as far as to get other Liberal MPs to quietly sign an open letter in hope this pressure would force the party to come forward.

-The reasons the negligence has been overlooked is cause nobody even knows what elastomeric respirators are or misunderstands them due to misinformation that due diligence should have easily caught but people often take their assumptions as fact. A press conference along with a letter to the government like the one created when ER and ICUs kept closing down asking for Ford to provide explanations into the negligence will go a long way. Workplaces and businesses would finally learn there are cost effective, sustainable protections that are readily available from dozens of manufacturers so they don't have to worry about infections and journalists would finally start covering the negligence so Ford can't keep running away from it.

-The NDP can ask the Auditor General to launch investigations into the lack of audit trail of the PPE stockpile and hold someone accountable for not letting her office know. Ford will not be able to prevent that investigation which will also uncover why a lot of the negligence occurred.

-The NDP can ask the Ministry of Labor to launch investigations with the knowledge that the province had the tools to eliminate the danger of Covid for workers in hospitals and ltc but that the PPE was kept locked up and workers kept misinformed which resulted in a significant harm to workers and a breach to 2 of the 3 basic rights workers have. The right to know and the right to a safe workplace.

-The NDP can ask for the stockpile to be distributed to HCWs and ltc workers that want them and any left over can be sent to other government workers. They can also ask Ford to apologize to HCWs and those in ltc. At the press conference, the victims and families that lost loved ones can give victim impact statements to how their life was affected by the province not preventing transmission with the PPE they had readily available.

With the rise of the new variants, I hope we can schedule a meeting as quickly as possible. With a press conference and media interviews, the public will finally be able to learn about elastomeric respirators and exposing the negligence would discourage Ford from continuing to do it. If the stockpile can get to workers fast enough, a lot of hospital closures can be prevented. Workplaces can also know to what available as protection for their employees so this will help reduce workplace transmission and prevent outbreaks.

Kind Regards,

Nick

> On Fri, Oct 14, 2022 at 9:01 AM Donato-Woodger, Ben <BDonato-Woodger@ndp.on.ca> wrote:
> Hello Nicolas,
>
> Thank you so much for taking the time to reach out to MPP Kristyn Wong-Tam's Office.
>
> My colleague Emma is away right now, and shared your email and request with me. I am MPP Wong-Tam's Queen's Park staff — so you have that context.
>
> I want to start by emphasizing how much I agree with you:
>
> - COVID is airbourne
> - Masks save lives
> - If the government delivered had higher quality masks sooner, many grandchildren could still be squeezing their grandparents hands
>
> Our office has HEPAs running constantly, provides free N95s to visitors, and has upheld our mask mandate because these truths are beyond reasonable doubt with the evidence that has been gathered. Our job is to help our neighbours — not to

> make them sick.
>
> Recognizing all of those things, I am unsure what more there is that we can do. The Ontario NDP moved many times for there to be a public inquiry into the Government's COVID-19 response. We tried to amend their anemic investigation to have a scope that went back to the reforms that structured LTC itself.
>
> Ford used his majority every time to vote down a real investigation. Anything that will make his cabinet look bad will be voted down, or prevented from being called to a vote entirely.
>
> I don't write any of this lightly. I was unable to visit a woman who was a grandmother to me as she died in LTC because of the government's failures to ensure adequate masking. I take the lives they took by failing personally, and I do not think that I will ever forgive Merilee Fullerton — or the entire PC caucus.
>
> To recap what we have done:
>
> - we called on the OPP to investigate deaths in LTC settings because of government mismanagement: https://toronto.citynews.ca/2021/05/06/ontario-ndp-opp-long-term-care-deaths/
> - we used every legislative tool to ensure a real inquiry (unfortunately, we are extremely limited by the Standing Orders when Ford has a majority) https://ottawa.citynews.ca/local-news/ontario-ndp-calls-for-public-inquiry-into-long-term-care-but-ford-wont-commit-2344357
>
> MPP Wong-Tam can raise these issues again in Queen's Park, as every New Democrat has before them, and Ford will vote down every single motion and Bill (again).
>
> I am happy to set up a meeting if that is the desired outcome, but I am unsure that it is. I am also happy to set up a call with you to discuss what the strategy and options are moving forward.
>
> I just want to be clear about my extremely depressing but painfully honest view that there cannot be justice delivered by Queen's Park as long as Doug Ford has a majority.
>
> Please let me know what kind of outcome you are looking for, and how you would like us to proceed
>
> Sincerely, and in mask-wearing solidarity,
>
> **Benjamin Donato-Woodger**
> Pronouns: He/Him | C: 416.209.6322
>
> ---
>
> Executive Assistant
> Office of **MPP Kristyn Wong-Tam** – **Toronto Centre**
> 401 – 120 Carlton St. | Toronto ON, M5A 3Z2
> Office : 416.972.7683 | kwt-co@ndp.on.ca
> On Oct 6, 2022, 11:28 AM -0400, Beattie, Emma <EBeattie@ndp.on.ca>, wrote:
>
> > Elastomer mask guy
> >
> > **Emma Beattie, Constituency Assistant**

18

December 14, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit once again asking if they should alert the Auditor General to the obstruction of justice that occurred after Doug Ford's office failed to alert the Auditor to the purchase of the 100,000 elastomeric respirators. It also contains another email confirming Kristyn sent the letter to Kieran Moore to ask about how the widespread negligence around elastomeric respirators occurred and that Nicolas would be alerted when he responded to the letter.

Source: Email communication

Gmail

Nicolas Smit <nicolas@ammaunited.org>

Letter you requested for CMOH

Donato-Woodger, Ben <BDonato-Woodger@ndp.on.ca>
Wed, Dec 14, 2022 at 9:36 AM
To: Nicolas Smit <nicolas@ammaunited.org>

Oh, and sorry, but to circle back to this question: should we write to the Auditor General and ask her to investigate the elastomeric respirators?

From: Donato-Woodger, Ben <BDonato-Woodger@ndp.on.ca>
Sent: December 14, 2022 9:35 AM
To: Nicolas Smit <nicolas@ammaunited.org>
Subject: Re: Letter you requested for CMOH

thank you Nicolas!

I sent the letter on Monday and will let you know when I hear back.

Out of curiosity, how long do you think it will take far-UV to become commercially feasiable?

I am wondering if we should begin advocating for the government to subsidize its deployment across public settings....

Thank you again!

Benjamin Donato-Woodger

Pronouns: He/Him | C: 416.209.6322

Executive Assistant

Office of **MPP Kristyn Wong-Tam** – Toronto Centre

120 Carlton Street. Suite 401 I Toronto ON, M5A 4K2

Office : 416.972.7683 I kwt-co@ndp.on.ca

Sign up for MPP Wong-Tam's Newsletter here

Let us know how we are doing here

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: December 10, 2022 5:24 PM
To: Donato-Woodger, Ben <BDonato-Woodger@ndp.on.ca>
Subject: Re: Letter you requested for CMOH

December 20, 2022 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit saying the only thing Kristyn would do to increase public pressure so Kieren Moore answers the letter in a timely manner is to put the letter on her website. The NDP refuses to hold a press conference, alert journalists or mention the negligence on social media or through other means. The NDP assumes journalists won't care about any of the negligence that occurred and they write that they have a quota on how many times they can reach out to journalists per month and think it would be a waste of time to use it to flag this widespread negligence to their attention.

Source: Email communication

Gmail

Nicolas Smit <nicolas@ammaunited.org>

Letter you requested for CMOH

Wong-Tam-QP, Kristyn <KWong-Tam-QP@ndp.on.ca>

Tue, Dec 20, 2022 at 2:18 PM

To: Nicolas Smit <nicolas@ammaunited.org>

Hi Nicolas!

We are happy for you to share the letter with the journalist!

I checked and our media team believes that the topic is in general too niche for journalists to pick it up. They limit how many times we email them. But I can definitely publish it on Kristyn's website as an alternative that you could use to share it?

Let me know!

Benjamin Donato-Woodger

Pronouns: He/Him | C: 416.209.6322

Executive Assistant

Office of **MPP Kristyn Wong-Tam** – Toronto Centre

120 Carlton Street. Suite 401 | Toronto ON, M5A 4K2

Office : 416.972.7683 I kwt-co@ndp.on.ca

Sign up for MPP Wong-Tam's Newsletter here

Let us know how we are doing here

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: Monday, December 19, 2022 2:25 PM
To: Donato-Woodger, Ben <BDonato-Woodger@ndp.on.ca>; Wong-Tam-QP, Kristyn <KWong-Tam-QP@ndp.on.ca>
Subject: Re: Letter you requested for CMOH

January 13, 2023 email from NDP MPP Kristyn Wong-Tam's office to Nicolas Smit letting Nicolas know that the Chief Medical Officer of Health had yet to answer Kristyn's letter in response to Nicolas' email from January 13, 2023 asking her office to confirm if the NDP had alerted the Auditor General to the purchases that were kept from the Auditor as they told him they would do. Nicolas also explains in that email that waiting for an answer before trying to have the negligence corrected while there were 322 active outbreaks at hospitals and long term care homes would delay helping end those outbreaks and that it would be negligent for the NDP to not speak up publicly after already not having an answer more than a month after sending the letter.

Source: Email communication

From: **Wong-Tam-QP, Kristyn** KWong-Tam-QP@ndp.on.ca
Subject: **Re: Flagging - update on the locked up PPE stockpile**
Date: **Jan 13, 2023 at 5:59:05 PM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hello Nicolas!

Thank you for sharing this. I am still waiting to hear back from the Chief Medical Officer — I will keep you posted.

Happy new year!

Benjamin Donato-Woodger
Pronouns: He/Him | C: 416.209.6322

Executive Assistant
Office of **MPP Kristyn Wong-Tam** – **Toronto Centre**
120 Carlton St. Suite 401 | Toronto ON, M5A 3Z2
Office : 416.972.7683 | kwt-co@ndp.on.ca

Sign up for MPP Wong-Tam's Newsletter here
Let us know how we are doing here

> On Jan 13, 2023, 5:37 PM -0500, Nicolas Smit <nicolas@ammaunited.org>, wrote:
>
> ! **CAUTION:** External message.
>
> Hi Ben and Kristyn,
>
> I wanted to let you know that the province currently has 322 active outbreaks at hospitals and ltc homes. This data is on page 12 of Public Health Ontarios data.
>
> https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-weekly-epi-summary-report.pdf?sc_lang=en
>
> These outbreaks are preventable and since the CMOH has yet to get back to you, I am wondering what it would take for you start speaking to the press and on social media to increase pressure and raise awareness to the problem so things don't keep moving at a snails pace as the health care systems continues to collapse in the background.
>
> There is no benefit for the NDP that I am aware of to remain quiet about this that would be worth letting people keep dying for in current outbreaks and delaying accountability for deaths and mass disability it already caused.
>
> You already have enough information and evidence to easily show widespread negligence & complacency plus a cover up with the Auditor General.
>
> Since you have known about this since August and have yet to speak about it on social media or with the press plus only sent the letter 5 weeks ago, I am worried that you are not taking this problem seriously even though HCWs & ltc workers are suffering and dying because of it.
>
> You said you would let the Auditor General know about the province hiding the purchase of the 100,000 elastomeric respirators months ago but I have yet to get confirmation you did this and the Auditor's office has yet to get ahold of me. Can you please let me know if you did let the Auditor know and when you did it.
>
> If the NDP can issue press releases, speak to journalists and confront Ford in question period for ltc homes not having a single N95 from June to December 2020 despite deadly outbreaks, I don't see why they can't talk about PPE that could've eliminated the N95 shortage since the 1st wave.
>
> https://www.ontariondp.ca/news/mpps-demand-ford-stop-withholding-n95-masks-sudbury-seniors-care-facilities-frontline-health

The NDP also spoke out about cloth masks so why can't they publicly speak out about PPE that is even more protective than N95?

https://ottawa.citynews.ca/local-news/ford-government-buying-2m-cloth-masks-for-ontario-schools-doctors-say-there-are-better-options-5880044

The NDP held a lot of press briefings, gave a lot of media interviews and had a lot of social media posts about how the N95 shortage and this problem goes hand in hand with that.

https://www.ontariondp.ca/news/doug-ford-must-stop-dangerous-delays-delivering-ppe-st-joseph-s-ndp

If you need even more evidence to show people how important the PPE was that Ford's office allowed to be locked up. I attached a 4 page letter I received from the CDC Director's office in response to an email I wrote her in August. The letter explains the CDC's position on elastomeric respirators and their significant importance in keeping HCWs and others safe.

I also attached an informal report I did for the USG on communication failures that occurred around elastomeric respirators and an attachment with detailed description of the negligence that occurred in Canada

Kind Regards,

Nicolas Smit
Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

21

October 27, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit thanking Nicolas for letting them know about the widespread negligence that occurred around elastomeric respirators and that John officially asked Christine Elliot to provide a written answer into why the public had been kept in the dark about the importance of elastomeric respirators and why so little information had come out about the government's purchase of the 100,000 elastomeric respirators.

Source: Email communication

From: **Osborne, Eric** EOsborne@liberal.ola.org
Subject: **RE: Government PPE Stockpile of 100,000 Elastomeric Respirators/ P100 Respirators Not Being Distributed**
Date: **Oct 27, 2020 at 2:54:12 PM**
To: **Nicolas Smit** smitnicolas@hotmail.com
Cc: **Fraser-CO, John** jfraser.mpp.co@liberal.ola.org, **Johnson, Grace** gjohnson@liberal.ola.org

Mr. Smit,

Thank you again for reaching out to our office and for providing these resources to help inform us of the situation.

MPP Fraser has tabled a question in the house to the Ministry of Health and Minister Elliott in regards to the situation.

In the link below you will find the question on page 49.

https://www.ola.org/sites/default/files/node-files/house/document/pdf/2020/2020-10/200_October_27_2020_Orders_0.pdf

We will make sure to share the Ministry's response with you once we receive it.

Regards,

Eric Osborne | Special Assistant |
Office of MPP John Fraser, Ottawa South
Bureau de député John Fraser, Ottawa-Sud
Room 448, Queen's Park
416-325-4670 | eosborne@liberal.ola.org

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: October 5, 2020 2:49 PM
To: Osborne, Eric <EOsborne@liberal.ola.org>
Cc: Fraser-CO, John <jfraser.mpp.co@liberal.ola.org>; Ian Hall <ihall@ontarioliberal.ca>; Damien O'Brien <dobrien@ontarioliberal.ca>
Subject: Government PPE Stockpile of 100,000 Elastomeric Respirators/P100 Respirators Not Being Distributed

Hi John/Eric,

Below, you will find the email from Doug Ford's office, confirming Ontario Health's official position that P100/elastomeric respirators are safe and recommended N95 alternatives and that the government bought 100,000 of those respirators from 3M in June. These respirators are recommended by the CDC, Ontario Health, Health Canada and other top health agencies as a better alternative to N95s yet they continue to be overlooked and underutilized despite being readily available and requested by health care unions.

This is a news article from April about my campaign to get them to health care workers and NDP Health Critic France Gelinas confirms the government had been looking into them and that some hospitals had them but that the government believes they were too dangerous to use.

https://www.northernontariobusiness.com/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

This is a transcript of my presentation to MPPs at a parliamentary committee meeting in July about how these respirators could significantly reduce the spread of the virus at hospitals, long term cares homes and anywhere clusters and outbreaks may occur.

https://www.ola.org/en/legislative-business/committees/finance-economic-affairs/parliament-42/transcripts/committee-transcript-2020-jul-13

Here are the CDC guidelines on their use.

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

The CFNU just released their 187 page investigation on failed Covid 19 PPE practices and recommended elastomeric respirators be used to replace N95s.

https://www.cbc.ca/news/health/covid19-health-workers-sars-1.5750439

https://www.atimeoffear.com/download

The government has not bothered to let health care workers, the public or the news media know that these respirators have been available for months or that the government made costly mistakes in April and May and accidentally said these respirators were too dangerous to use and then took them away from health care workers when they needed them the most.

The government has refused to speak about elastomeric respirators during press conferences or with journalists so businesses that could have used N95 alternatives like food plants and other areas with large clusters and outbreaks do not know there is PPE available to keep staff safe and therefore more people are getting infected and having to be hospitalized.

Despite the government's stance that these respirators offer health care workers a safe and sustainable protection from the virus, staff at most hospitals and long term care homes continue to be actively prevented from using them and are forced to take dangerous shortcuts with PPE instead due to the lack of communication and major complacency by the politicians involved in the purchase and the approval process of these respirators.

Since these respirators are already available, staff just need to be fit tested and trained on how to safely use them yet there has not been any attempt to even start that process. 1 elastomeric respirator can protect a health care worker for years so once the government hands out the respirators, 100,000 health care workers in Ontario will no longer have to reuse or share N95s or be forced to use surgical masks around Covid patients. This would also greatly increase the stockpile of N95s available for those that would like to use N95s as they were meant to be used.

These respirators are extremely well liked by health care workers that use them. The Allegheny Health Network did a large study and after 2000 health care workers used these respirators for a month, none wanted to return to using N95s.

These respirators have been used by CDC health care workers since the 1990s and through several pandemics. These respirators are so sustainable that some hospitals used them in 2009 for H1N1 and then stored them for 10 years and took them back out for the current pandemic.

There has been no attempt what so ever by the government to let Canadians know there are safe and approved N95 alternatives so a lot of businesses have had to close down since they do not know to consider other types of PPE when they cannot find N95s. Had elastomeric respirators been used at food plants like the Cargill plant in Alberta, 1000s of Canadians would have been spared from infection and many lives would have been saved and the economic impacts from this outbreak would have been minimized.

Here is Health Canada's position that these respirators are a safe alternative to N95s.

https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/medical-masks-respirators/safety-performance-specifications.html

https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/medical-masks-respirators/health-professionals.html#a3

Here is Ontario Health's position on elastomeric respirators

https://www.publichealthontario.ca/-/media/documents/ncov/covid-wwksf/what-we-know-reuse-of-personal-protective-equipment.pdf?la=en

This is an article about how the US failed to listen to CDC pandemic planning recommendations and stockpile elastomeric respirators for health care workers in 2018.

https://www.usatoday.com/story/news/nation/2020/04/03/coronavirus-national-stockpile-disposable-n-95-face-masks-reusable-respirator/5118669002/

Here is a New York Times article from late May about elastomeric respirators continuing to be overlooked despite the severe shortage of N95s.

https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

Here is the large scale study from the Allegheny Health Network.

https://www.facs.org/media/press-releases/2020/reusable-masks-061220

Here is a website Australian health care workers made to educate the public on these respirators the news media and government are failing to warn the public to use these.

https://healthcareworkersaustralia.com/elastomeric-mask/

This year for respiratory protection week, the CDC focused on elastomeric respirators.

https://www.cdc.gov/niosh/emres/2019_ncov_default.html

https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource1quest2.html

The CDC is also expanding their use.

https://www.federalregister.gov/documents/2020/09/14/2020-20115/a-national-elastomeric-half-mask-respirator-ehmr-strategy-for-use-in-healthcare-settings-during-an

In April and May, politicians publicly said elastomeric respirators were dangerous which is why a lot of health care staff continue to be prevented from using them and companies stopped donating them to hospitals. Once the government holds a press conference to let people know these respirators are safe and valuable to keep health care workers from being exposed to the virus, donations can start pouring in for health care workers across Canada to use.

I hope this information helps and if there is anything else I can do, please let me know. I have been working with the top experts around the world for my awareness campaign and most of these experts would be happy to be interviewed.

Sincerely,

Nicolas Smit
46 Mary Ave
Naughton, Ontario
P0M 2M0
Cell:7056269863

Sent from my iPhone

Begin forwarded message:

From: "Morgado, David (OPO)" <David.Morgado2@ontario.ca>
Date: June 29, 2020 at 1:21:30 PM EDT
To: "smitnicolas@hotmail.com" <smitnicolas@hotmail.com>
Subject: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Please see below response.

P100 Respirators – Background and Current Status

Ontario does not prohibit the use of P100 respirators. Clinical guidance in Ontario, from the Chief Medical Officer of Health, is that the P100 is an alternative, equivalent product to the N95 respirator.

Health Guidance for alternative equivalent product to the N95 Masks:

Health Canada guidance lists P100 respirators as an alternative, equivalent product to the N95 masks. Specifically, Health Canada advises the following:

> "During the COVID-19 outbreak when medical-grade N95 or equivalent respirators aren't available, health care institutions may, at their discretion, purchase and use:
>
> - commercial-grade N95 (or P95 and similar) respirators
> - equivalents such as commercial-grade KN95 (or KP95) respirators
> - **other alternative, equivalent commercial-grade filtering facepiece respirators that are at least as protective as the commercial-grade N95, such as the N99, N100, P95, P99, P100, R95, R99, and R100 respirators.**
>   - P100 respirators are filtering, oil-resistant industrial respirators. These are similar to the N95 respirators, but their filter performance of airborne particles is greater than 95% (99.97%).
>   - N100 respirators have the same filtration performance as the P100 but are not oil resistant (similar to the N95)." (**emphasis**

added)

Ontario's Chief Medical Officer of Health guidance for COVID+ and airborne precautions in acute care settings states "**N95 fit tested respirator, or approved or equivalent or better protection.**"

Use of 7500 series Half-Faced Elastomeric Respirators with P100 filters in Ontario:

During the course of the COVID-19 pandemic, the Ontario Government has looked towards sourcing alternative models to traditional N95 respirators.

This pursuit has included alternative NIOSH approved disposable models and reusable formats such as Elastomeric and Power Air Purifying Respirators (PAPR).

To date, the Province has purchased 100,000 units of **7500 series Half-Faced Elastomeric Respirators with 100,000 P100 filters**. A first shipment of 25,000 units arrived in Toronto and are in the MOEC warehouse week. The remainder of these respirators are expected to arrive by the end of July 2020. Ontario Health is in the process of determining how to allocate these shipments to hospitals.

Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.

Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

Thanks,

David Morgado

Executive Assistant to the Premier of Ontario
Office of the Premier of Ontario

From: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Sent: June 29, 2020 12:12 AM
To: Morgado, David (OPO) <David.Morgado2@ontario.ca>
Subject: FW: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

See below.

Rana Shamoon
Director, Health Policy I Office of the Premier

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 26, 2020 10:24 PM
To: Silva, David (MGCS) <David.Silva@ontario.ca>; MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: Re: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Thank you very much, David.

Adding Rana Shamoon for her awareness.

P

Get Outlook for iOS

From: Silva, David (MGCS) <David.Silva@ontario.ca>
Sent: Friday, June 26, 2020 6:53:28 PM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Good Evening Allan and Patrick,

Responding on Heidi's behalf with the following update provided by the teams at MGCS, MOH and OH. Please let us know if you have any questions.

David

P100 Respirators – Background and Current Status

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Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.

Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

From: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Sent: June 26, 2020 9:15 AM
To: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>; Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Morning Patrick,

This is news to me. Let me ask the team for an update for us both.

Heidi - Can you coordinate an update w Mel and Peter?

A

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 24, 2020 11:06 AM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Cc: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Subject: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Hi Allan,

Rana Shamoon and I have received outreach regarding HC review of the P100 Respirator (please see attached).

The outreach suggests that Ontario has prohibited the use of this mask type, further suggesting that Ontario hospitals have abundant inventories of this type of mask. The issue HC is raising is that no application has been received to review/approve this product.

Are you able to help bring clarity to this?

Thank you for your help.

P

Patrick Sackville
Executive Director of Policy
Office of the Premier of Ontario
Patrick.Sackville@Ontario.ca

---------- Forwarded message ---------
From: **Nicolas Smit** <smitnicolas@hotmail.com>
Date: Tue, Jun 16, 2020 at 9:50 AM
Subject: Health Canada Approval of P100 Respirators

Hi XXXXXXX,

There is a serious issue in regards to PPE for health care workers which have just been approved by Health Canada that should get Doug Ford's immediate attention. I am forwarding this email from Health Canada which indicates why they have decided to approve P100 respirators 10 weeks after the Ontario government started saying they were dangerous and told hospitals they should not use their inventory of P100s under any circumstance.

This is a New York Time articles explaining P100 respirators in detail and why the US has used them for so long.

https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

This is a Northern Ontario Business article where Ontario Health Critic France Gelinas explains that Ontario hospitals have a lot of P100 respirators in their inventories but that the government has decided to not allow hospital staff to use them.

https://www.northernontariobusiness.com/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

Here is an article that just came out about a month long test using thousands of P100s in Pittsburg hospitals.

https://www.mcknights.com/news/clinical-news/use-of-elastomeric-respirators-could-reduce-providers-need-for-n95-masks/

I am hoping Doug Ford and his team can look into this, talk to Health Canada and France Gelinas. I believe Doug Ford needs to hold a press conference to announce this new option for health care workers in hospitals and long term homes because there has been a lot of misinformation accidentally spread by the government and this needs to be addressed so that P100 are not feared.

Hospitals already have 10,000s of P100 respirators available so with a mandate from Doug Ford, front line workers could immediately have access to enough PPE to reduce the pressure on the system and lessen the worries of many Canadians. This will give Doug a huge win and give the province a boost of confidence that the virus is now under more control.

Kind Regards,

Nicolas Smit
46 Mary Ave
Naughton, On
P0M 2M0

Cell: 7056269863

Sent from my iPhone

Begin forwarded message:

From: "Boudreau, David (HC/SC)" <david.boudreau@canada.ca>
Date: June 12, 2020 at 10:28:32 AM EDT
To: "smitnicolas@hotmail.com" <smitnicolas@hotmail.com>
Subject: 20-108252-127 Response from the Medical Devices Directorate, Health Canada / Réponse de la Direction des instruments médicaux, Santé Canada

Hello, Bonjour, Mr. Smit,

Please see my attached response in regards to your June 8th correspondence.

Best regards,

David Boudreau, ing.
A Director General, Medical Devices Directorate
Health Products and Food Branch
Health Canada / Government of Canada
david.boudreau@canada.ca / **Tel: 819-639-4117**

Directeur général int., Direction des instruments médicaux
Direction générale des produits de santé et des aliments
Santé Canada / Gouvernement du Canada
david.boudreau@canada.ca / **Tél: 819-639-4117**

December 2, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit letting him know they were happy to have seen the Sudbury Star article mentioning elastomeric respirators and the province's stockpile they have available. The email also says the office will try and look into why the Minister of Health had taken an exceptionally long time without providing any answers.

Source: Email communication

From: **Osborne, Eric** EOsborne@liberal.ola.org
Subject: **RE: Sudbury Star article about Ontario Health and elastomeric respirators**
Date: **Dec 2, 2020 at 5:53:31 PM**
To: **Nicolas Smit** smitnicolas@hotmail.com

Thanks Nicolas,

Glad to see this is finally picking up some steam with media and other parties.

I will be looking into getting an answer out of the Minister as it has taken an exceptionally long time to get a response to this important question.

I'll keep you posted,

Regards,

Eric Osborne | **Special Assistant** |
Office of MPP John Fraser, Ottawa South
Bureau du député John Fraser, Ottawa-Sud
Room 448, Queen's Park
416-325-4670 | eosborne@liberal.ola.org

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: November 27, 2020 9:09 AM
To: Fraser-CO, John <jfraser.mpp.co@liberal.ola.org>
Subject: Sudbury Star article about Ontario Health and elastomeric respirators

Hi John and Eric,

I wanted to let you know the Sudbury Star came out with an article about elastomeric respirators and they interviewed MP Carol Hughes, several Ontario Health officials and myself for the article. Ontario Health confirms their recommendations to use elastomeric respirators.

https://www.thesudburystar.com/news/local-news/sudbury-engineer-raising-awareness-about-n95-mask-alternative

Now that the article came out, some of local NDP MPPs I had asked for months to come forward and ask Ford to distribute the respirators are now saying they will help. Jamie West posted this about me and the respirators on his social media.

https://www.facebook.com/JamieWestNDP/photos/a.286720765105678/1078260219285058/?type=3

https://twitter.com/jamiewestndp/status/1331645804277280769?s=21

I noticed the Minister of Health has still not answered John's questions and that it is now in Monday's notices. Hopefully when she answers John, she also explains how it took so look to answer him and that during the time she refused to answer and distribute the respirators can John can share the number of outbreaksat the long term care homes and hospitals during that time and also name some that had more staff infections like the one in Scarborough with over 70 staff.

If Ford wanted to reduce the spread of the virus, he could have easily distributed elastomeric respirators to ltc homes in July or when the first employee became infected and additional PPE was clearly needed. Because of Ford's delays and refusal to be transparent, thousands of preventable infections have occurred among health care workers who then spread it to residents they care for. Had Ford listened to his experts and distributed the recommended respirators, the GTA area and others cities could have prevented the need for lockdowns since the spread would have been better contained and these outbreaks would not be occurring.

Sincerely,

Nicolas

Sent from my iPhone

December 17, 2020 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit saying they are happy to see the Radio Canada news investigation into the province not informing hospitals and long term care homes to the Ontario Health recommendations to use elastomeric respirators. They say that while the Minister was supposed to have given an answer by an original December deadline, she now had an extension and doesn't have to provide an answer until February 22, 2021 but that the office would try and get an answer much sooner.

Source: Email communication

From: **Osborne, Eric** EOsborne@liberal.ola.org
Subject: **Re: Radio Canada News article and TV segment on elastomeric respirators and the government stockpile**
Date: Dec 17, 2020 at 12:12:02 PM
To: Nicolas Smit smitnicolas@hotmail.com, Fraser-CO, John jfraser.mpp.co@liberal.ola.org

Hi Nicolas,

I'm happy to see this story getting some more coverage with all the hard work you have put in.

I checked in with the assembly and unfortunately, we have not yet received a reply, **and** the response is now due on Thursday, February 18, 2021.

Because the House adjourned earlier than expected by two Sessional days, the 24 sessional day deadline for the Government to table a response was also extended by two Sessional days. If there is no response tabled by the Ministry by Thursday, February 18, 2021, MPP Fraser can on a Point of Order in the House on Monday, February 22, 2021 and request that the Speaker inquire with the Minister of Health on the status of the response.

I'm sorry this simple task has now been caught up in a bit of a procedural mess. I am contacting the ministry directly to see if we can get you the response you deserve sooner than February. The Clerk's office has also reached out to Cabinet staff to ensure we get the response directly and as soon as possible.

I will make sure to send you any information the moment it becomes available.

Kind regards,

Eric Osborne

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: December 15, 2020 5:59 PM
To: Osborne, Eric <EOsborne@liberal.ola.org>; Fraser-CO, John <jfraser.mpp.co@liberal.ola.org>
Subject: Radio Canada News article and TV segment on elastomeric respirators and the government stockpile

Hi Eric and John,

I wanted to let you know that Radio Canada did an investigation into elastomeric respirators and the government stockpile. They interviewed myself, Ontario Health officials as well as union leaders who confirmed they have been fighting with the government to finally have access to the stockpile of elastomeric respirators.

This is the news article they published.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

I have also attached the province wide televised news segment in the email.

I did a presentation for the Occupational Health Clinics for Ontario Workers on elastomeric respirators last week and the presentation is now online.

https://www.ohcow.on.ca/news/occ-covid-science-solutions-and-success-stories.html

CBC Montreal called me last week and interviewed me on the phone for 40 minutes and they want to do a segment on Quebec but might expose the problems in Ontario as well. Natalia Goodwin from CBC Ottawa is trying to convince her producers in Ottawa to do an in depth investigation for Ontario.

The Liberals have been the only political party to investigate the problems and ask for answers. After the Sudbury Star article came out, MPP Jamie West went on social media and said he would help me out now that the article exposed the problems but he has yet to even mention the existence of elastomeric respirators since that time despite complaining in parliament several times about how some long term care homes have not had an N95 since June and help is desperately needed.

After the Sudbury Star article came out, NDP MP Carol Hughes sent me an email letting me know I should not be criticizing the NDP because they only have the power to criticize, advocate or recommend. I told her I had begged the NDP since April to criticize Ford and Trudeau for their failures to use experts and for spreading misinformation on elastomeric respirators being too dangerous to use which the NDP also repeated in interviews with journalists as recently as the Sudbury Star article. I had begged them in July to advocate for the stockpile to be distributed and to recommend the government let the public know about the recommendations to use them which the NDP kept telling me at every opportunity that there was no need to do or say anything despite unions and health care workers begging for these respirators.

Carol told me that while health care workers could have used elastomeric respirators for protection from Covid in the past, as far as she knew, health care workers now had all the PPE they needed so it wasn't necessary to advocate for them or apologize for past mistakes. I told her that before she should say comments like that, she should talk to the Ontario NDP which are saying health care workers lack basic PPE like N95s but neither the Federal nor provincial NDP actually care enough to do or say anything to actually help health care workers.

Jamie West told me that since John was already investigating for the Liberal party, that there was no need for him or the NDP to say anything. I hope John is not only able to expose the problems that Ford has caused but that he can also expose the NDP for their inaction despite being so close to the approval process and knowing about all the problems that were happening.

Sincerely,

Nicolas

Sent from my iPhone

24

January 25, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit saying John was happy to speak to CBC investigative journalist Natalia Goodwin, a CBC investigative journalist that was working with Nicolas to try and convince the CBC to launch a large investigation since November 2020. John's office says they were happy very reputable sources and associations were getting behind elastomeric respirators plus the need to investigate the negligence and that the Minister of Health had yet to provide John with answers to his questions from October.

Source: Email communication

From: Osborne, Eric EOsborne@liberal.ola.org
Subject: Re: CFNU asking for elastomeric respirators
Date: Jan 25, 2021 at 1:47:15 PM
To: Nicolas Smit smitnicolas@hotmail.com

Nicolas,

Thank you for keeping us updated. As I'm sure you are aware, John was happy to speak to Natalia from CBC. We are happy to see this picking up attention and that some very reputable sources and associations are getting behind it.

What you have brought to light is very important.

I will continue to monitor the situation and we *will* get you a response from this government on why they acted (or lack thereof) in the way that they did.

Hope things are well.

Eric

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Eric Osborne | Special Assistant |
Office of MPP John Fraser, Ottawa South
Bureau du député John Fraser, Ottawa-Sud
Room 448, Queen's Park | eosborne@liberal.ola.org

Hi Eric,

I wanted to let you know that the Canadian Federation of Nurses Union issued a media release on January 8th asking the government to use elastomeric respirators since they offered better protection than N95s and were readily available and that using surgical masks and reusing N95s was dangerous.

https://nursesunions.ca/cfnu-welcomes-the-phacs-updated-infection-protection-and-control-guidance-for-acute-health-care-settings/

The Ontario Nursing Association recently settled with the government in court a couple weeks ago for the government to provide elastomeric respirators before they force health care workers to reuse N95s or expired PPE. One of the problems with reusing N95s besides losing the elasticity they need to form a proper seal is that N95s work by filtering air particles by using an electrostatic charge to attract and trap the particles. Being exposed to humidity causes the N95 to start losing its charge and then it no longer works as it is intended.

A great example John can use to show the Minister of Health why it was important to listen to unions and distribute the respirators instead of fight with the unions against distributing them is the Roberta Place outbreak in Barrie. 100% of staff have become and this could have easily been prevented if they had elastomeric respirators to keep staff safe. Michael Hurley, the Vice President of CUPE and president of the Ontario Council of Hospital Unions explained in December that the reason the virus continues to spread out of control in ltc homes is that he gov refuses to distribute the stockpile and health care workers continue to be told it is not necessary to use elastomeric respirators.

If Ford, Elliot and Fullerton do not plan on using elastomeric respirators during an outbreak that is so bad, they have to shut down the province to reduce the spread and health care workers still continue to be infected in large numbers, when would they plan to distribute them and let the public know they have been safe and recommended by Ontario Health since May.

I continue to try and get journalists to investigate why the government won't distribute the stockpile or inform the public about their recommendations to use them so they and the public can pressure the government to answer John's questions but the journalists continue to tell me they have only heard that elastomeric respirators were dangerous and they do not believe Ford would choose to shut down the province to slow the spread if the spread could have been slowed down by using PPE the government has had since June. They assume there is a good reason the government is not distributing the respirators.

The government has still refused to address the open letter from the 500 Canadian scientists, engineers, physicians and union leaders asking for the government to use elastomeric respirators and make simple improvements to ventilation to prevent the outbreaks we continue to see as common.

https://www.cbc.ca/amp/1.5860809

Hopefully once Elliot answers John, the news organizations will do an investigation and find out why it took so long to get answers and how the government could assume keeping these respirators in a warehouse was more beneficial than protecting health care workers that kept asking for it.

Keep up the great work,

Nicolas

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February 22, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit sharing the answer John received on the last possible date the Minister had to provide answers. The email also shares the letter which provides a 1 paragraph answer explaining the public wasn't educated enough to be able to be told about the recommendations to use elastomeric respirators and that healthcare providers had been made aware of the stockpile.

Source: Email communication

From: **Osborne, Eric** EOsborne@liberal.ola.org
Subject: Ministry Response P100 Respirators
Date: Feb 22, 2021 at 4:50:31 PM
To: **Nicolas Smit** smitnicolas@hotmail.com
Cc: **Johnson, Grace** gjohnson@liberal.ola.org

Hi Nicolas,

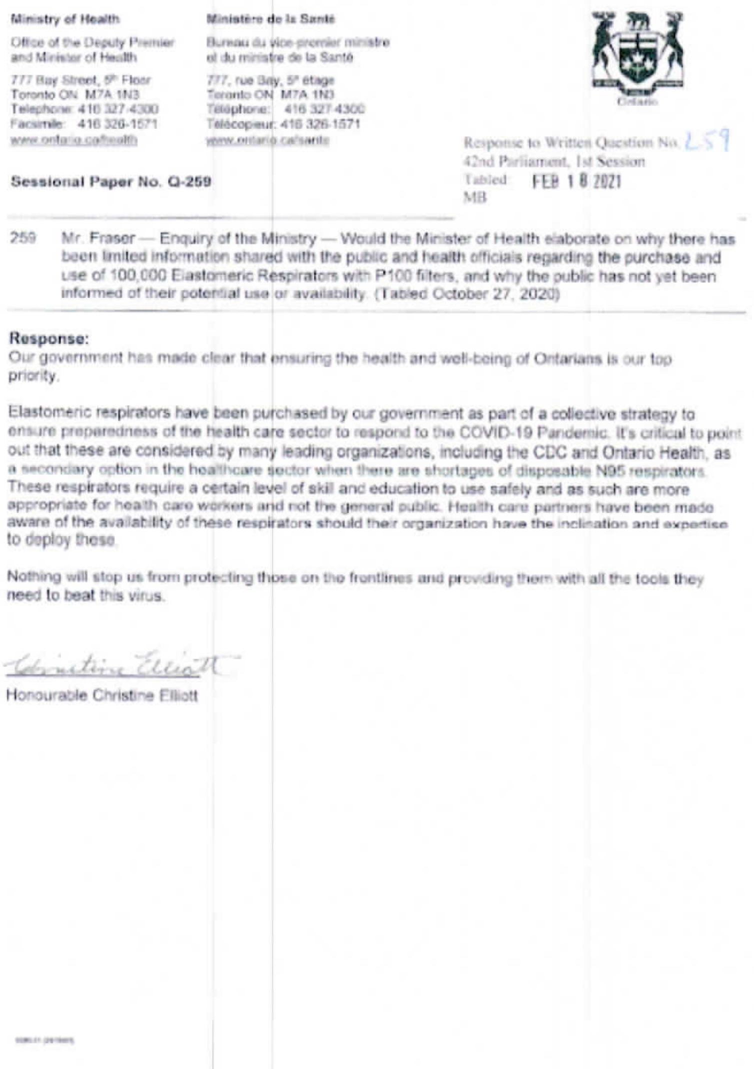
We have finally received a response from the Ministry regarding our order paper question about the P100 respirators.

In regards to your previous email referencing MP Turnbull, I have forwarded the message to MPP Fraser.

Thanks again for your continued advocacy.

Regards,

Eric Osborne | Special Assistant |
Office of MPP John Fraser, Ottawa South
Bureau du député John Fraser, Ottawa-Sud
Room 448, Queen's Park
416-325-4670 | eosborne@liberal.ola.org



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Facsimile: 416 326-1571
www.ontario.ca/health

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Response to Written Question No. 259
42nd Parliament, 1st Session
Tabled FEB 18 2021
MB

Sessional Paper No. Q-259

259 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health elaborate on why there has been limited information shared with the public and health officials regarding the purchase and use of 100,000 Elastomeric Respirators with P100 filters, and why the public has not yet been informed of their potential use or availability. (Tabled October 27, 2020)

Response:
Our government has made clear that ensuring the health and well-being of Ontarians is our top priority.

Elastomeric respirators have been purchased by our government as part of a collective strategy to ensure preparedness of the health care sector to respond to the COVID-19 Pandemic. It's critical to point out that these are considered by many leading organizations, including the CDC and Ontario Health, as a secondary option in the healthcare sector when there are shortages of disposable N95 respirators. These respirators require a certain level of skill and education to use safely and as such are more appropriate for health care workers and not the general public. Health care partners have been made aware of the availability of these respirators should their organization have the inclination and expertise to deploy these.

Nothing will stop us from protecting those on the frontlines and providing them with all the tools they need to beat this virus.

Christine Elliott
Honourable Christine Elliott

Ministry of Health

Office of the Deputy Premier
and Minister of Health

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Telephone: 416 327-4300
Facsimile: 416 326-1571
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Ontario

Response to Written Question No. 259
42nd Parliament, 1st Session
Tabled: FEB 18 2021
MB

Sessional Paper No. Q-259

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259 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health elaborate on why there has been limited information shared with the public and health officials regarding the purchase and use of 100,000 Elastomeric Respirators with P100 filters, and why the public has not yet been informed of their potential use or availability. (Tabled October 27, 2020)

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Nothing will stop us from protecting those on the frontlines and providing them with all the tools they need to beat this virus.

Christine Elliott

Honourable Christine Elliott

October 15, 2021 email from Ontario Liberal Health Critic John Fraser's office to Nicolas Smit letting him know John was not happy with the answer he received from the Minister of Health 8 months prior and that he would ask her to provide a much more detailed answer to learn each hospital and long term care home that received the elastomeric respirators and also why the entire stockpile wasn't distributed when so many hospitals and long term care homes lacked proper PPE for such a long period of time.

Source: Email communication

From: **Osborne, Eric** EOsborne@liberal.ola.org
Subject: **Order Paper Question - Oct 2021**
Date: **Oct 15, 2021 at 12:39:33 PM**
To: **Nicolas Smit** smitnicolas@hotmail.com
Cc: **Johnson, Grace** gjohnson@liberal.ola.org

Hi Nicolas,

I hope things are well.

Since the Premier prorogued the legislature, the order paper was wiped clean. MPP Fraser reinstated a previous question regarding elastomeric respirators since we did not receive a great answer last time.

We edited the question to ask the government to justify their decision-making. We hope to get a better response and will share it with you when we get one.

I have attached a screenshot and it is available on the order paper here: https://www.ola.org/en/legislative-business/house-documents/parliament-42/session-2/2021-10-18/orders-notices

Regards,

Eric

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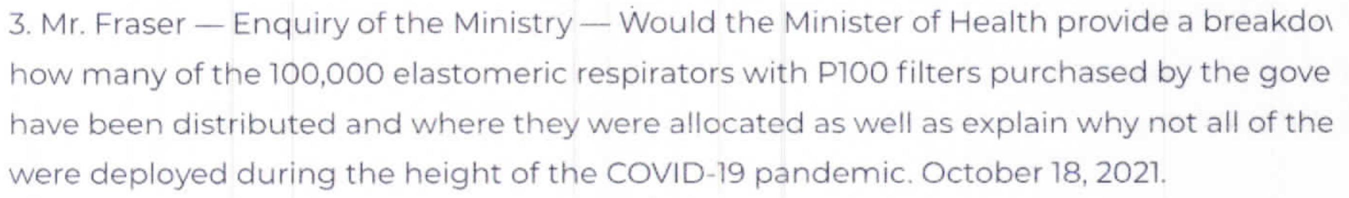
Eric Osborne | Legislative Assistant |
Office of MPP John Fraser, Ottawa South
Bureau du député provincial John Fraser, Ottawa-Sud
Room 448, Queen's Park | eosborne@liberal.ola.org



3. Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health provide a breakdo
how many of the 100,000 elastomeric respirators with P100 filters purchased by the gove
have been distributed and where they were allocated as well as explain why not all of the
were deployed during the height of the COVID-19 pandemic. October 18, 2021.

December 2, 2021 letter from the Minister of Health to John Fraser which didn't provide answers into John questions and instead gave a 1 paragraph answer explaining that 22,500 elastomeric respirators had been sent to hospitals without explaining why the entire stockpile wasn't distributed. The CBC investigation by Natalia Goodwin released June 10, 2021 included the confirmation by the government that the entire stockpile of 100,000 was still sitting in a warehouse not being used while a further 22,000 elastomeric respirators were supposed to be in use however unions confirmed to not have seen those in use either.

Source: Letter from PC MPP Christine Elliot to Liberal MPP John Fraser

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Ontario

Response to Written Question
42nd Parliament, 2nd Session
Tabled: DEC 0 2 2021
LF

Sessional Paper No. Q-3

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3 Mr. Fraser — Enquiry of the Ministry — Would the Minister of Health provide a breakdown of how many of the 100,000 elastomeric respirators with P100 filters purchased by the government have been distributed and where they were allocated as well as explain why not all of these masks were deployed during the height of the COVID-19 pandemic. (Table October 18, 2021)

Response:

The Ministry of Health has made elastomeric respirators available throughout the pandemic esponse process, distributing more than 22,500 to date. The respirators are provided upon reque o service providers within the health care sector, such as long-term care homes, hospitals, etirement homes, and primary care providers. Although elastomeric respirators provide equivaler rotection as a N95 respirators, there are challenges with deployment including appropriate trainir nd expertise related to:

- cleaning,
- fitting,
- donning and doffing

dditionally, there are patient care considerations for appropriate use including challenges in ommunicating to patients, visual appearance and its impact on certain patient populations and hallenges in protecting patients from wearers of the elastomeric due to insufficient source control rotections (e.g., air exhaust valve does not filter for particles). The Ministry of Health has made lastomeric respirators available to all eligible sites that are able to support appropriate deploymer nd use.

Honourable Christine Elliott

February 25, 2021 email from Liberal MP Ryan Turnbull to Nicolas Smit letting him know he had been talking to the federal Liberal Caucus about the issues around elastomeric respirators and that he had also been talking about the negligence that occurred on social media.

Source: Email communication

From: Turnbull, Ryan - M.P. Ryan.Turnbull@parl.gc.ca
Subject: FW: OHCOW Webinar
Date: Feb 25, 2021 at 4:40:19 PM
To: smitnicolas@hotmail.com

Dear Nicolas,

Thank you for your email. I appreciate you sending the link along.

Regretfully, I am unable to participate, but rest assured I have raised the issues surrounding elastomeric respirators with my Caucus colleagues and on social media.

I hope you and your family are staying healthy and safe.

With my kind regards,

Ryan Turnbull

Member of Parliament for Whitby

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: February 23, 2021 3:40 PM
To: Turnbull, Ryan - M.P. <Ryan.Turnbull@parl.gc.ca>
Subject: OHCOW Webinar

Hi Ryan,

You might be interested in taking part in a webinar by the Occupational Health clinics for Ontario Workers on March 5. Simon Smith, Canadian Standards Association Chair for biological aerosols working group will be moderating the event. They will be going in detail into why surgical masks have not been protecting health care workers, the proper ways to use and dispose N95s to prevent infections as well as the need to use elastomeric respirators.

https://www.ohcow.on.ca/news/occ-covid-science-solutions-and-success-stories.html

https://www.eventbrite.com/e/occ-covid-a-year-in-review-face-coverings-respirators-filling-the-gaps-registration-141866413261

Sincerely,

Nicolas Smit

Sent from my iPhone

29

March 2, 2021 email from Liberal MP Ryan Turnbull to Nicolas Smit thanking Nicolas for the detailed information about all the negligence around elastomeric respirators that occurred at the provincial and federal level. He also once again confirms he is speaking with the Liberal Caucus and that he will continue to promote the importance of elastomeric respirators on social media.

Source: Email communication

From: Turnbull, Ryan - M.P. Ryan.Turnbull@parl.gc.ca
Subject: FW: Elastomeric Respirator Information
Date: Mar 2, 2021 at 10:17:36 AM
To: smitnicolas@hotmail.com

Dear Nicolas,

Thank you for sending me these important resources regarding Elastomeric Respirators.

I have raised the issues you brought to my attention with my caucus colleagues and will continue to promote their use on social media.

Thank you for the work you are doing.

With my best,

Ryan Turnbull, M.P.

Whitby

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: March 1, 2021 8:50 PM
To: Turnbull, Ryan - M.P. <Ryan.Turnbull@parl.gc.ca>
Subject: Elastomeric Respirator Information

Hi Ryan, Minister Anand and Minister Hajdu,

Elastomeric respirators, also known as P100 respirators, have been used by the CDC and health care workers for over 25 years. The US government has a pilot project underway with the goal of putting elastomeric respirators into widespread use.

What makes elastomeric respirators different than the most commonly used PPE (surgical masks) is that they:

- Are form fitting like an N95 so air does not leak through the sides like a surgical mask would
- Use an electrostatic charge like an N95 to attract and trap virus particles
- Due to their electrostatic charge, they can filter small virus particles that surgical masks are not able to filter out due to their size
- Are made to be reused
- Their rubber like material can be used in more work environments and can stop liquids from degrading the material
- Are preferred by health care unions

Compared to an N95, elastomeric respirators can:

- Filter out 99.9997% of airborne particles and viruses vs an N95 that is made to filter out 95% of airborne particles and viruses.
- Can be safely disinfected between patient interactions
- Can be safely disinfected and reused for months to years depending on the manufacturer and the way they make their

respirator

- Because of their rubber material, more people are able to be properly fit tested and use them than N95s
- Are made by dozens of US and Canadian manufacturers in sufficient numbers to give every health care worker in Canada their own respirator making the issue of PPE shortages disappear almost overnight
- Health care worker versions of elastomeric respirators are more comfortable and easier to communicate in than N95s
- The American College of Surgeons study from June 2020 showed that once health care workers are properly trained to use them, they prefer them over N95s and all 2000 health care workers who used them for the 4 week study refused to go back to using N95s
- Can reduce PPE costs by over 90% by switching from N95s to reusable respirators
- Usually have a removable filter
- Costs for elastomeric respirators start at around $15 but since they can be reused for years, it's a small investment for such a large return
- Parts don't stretch or break while disinfecting and health care workers are not afraid to reuse them and risk infection unlike N95 reuse
- Can eliminate the need to reuse N95s or use expired PPE
- Can help eliminate workplace outbreaks such as food plants since they are readily available and supplying the public and every health care worker in Canada can be done simultaneously without having the cut corners and thus eliminating a large amount of community spread
- Can be quickly mass produced by Canadian manufacturers to eliminate the need to use PPE from other countries. Even some of the newer manufacturers can produce over 1 million elastomeric respirators per month since they use injection molding
- Can help eliminate PPE waste and litter
- Can easily do a seal check every time they are donned ensuring a good fit and reducing likelihood of exposure from wearing the wrong size
- Are often used in mining, construction and agricultural settings and if these industries were told about their value during the pandemic, they could donate unused stock to local non profits or charities that distribute PPE where it is needed most
- They are readily available and long term costs are low so it would cost the Canadian government less than $20 million to give every health care worker their own elastomeric respirator eliminating a large amount of spread in hospitals allowing for the return of more surgeries and essential medical procedures

This is the CDC page describing the difference between surgical masks, N95s and elastomeric respirators.

https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

This Canadian manufacturer made a health care worker version of an elastomeric respirator, they just sold 40,000 to the Quebec government and they can make 1 million per month per mold. This is just one of many examples of what our Canadian manufacturers can do

https://dormafiltration.com/

https://www.lapresse.ca/covid-19/2021-02-12/quebec-achete-40-000-masques-n99-a-dorma-filtration.php

This is a presentation I did for the Occupation Health Clinics for Ontario Workers on elastomeric respirators in a health care setting as well as common misinformation surrounding their use.

https://www.ohcow.on.ca/edit/files/occ-covid/ohcow_nicolas_smit.pdf

At the bottom of the email, I have included numerous additional resources to help you better understand elastomeric respirators. On a side note, Canadian manufacturers are starting to work together in a collaboration called the Canadian Association of PPE or CAPPEM. They are hoping to show the Canadian government that widespread use of high filtration masks from Canadian manufacturers is possible so that there is no longer a need for the government to use PPE from foreign manufacturers.

Sincerely,

Nicolas Smit

ADDITIONAL RESOURCES

This is the CDC page dedicated to elastomeric respirators and it includes the current pilot for widespread use in America.

https://www.cdc.gov/niosh/npptl/respirators/elastomeric/default.html

The CDC Guidelines on elastomeric respirators.

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

This is a press release by the American College of Surgeons about the large trial with 1000s of health care workers using their own elastomeric respirator during the first wave.

https://www.facs.org/Media/Press-Releases/2020/reusable-masks-061220

This is a 13 minute video about that trial and how health care workers really liked using them, how easy it was to train them and how well they were received by patients and staff.

https://www.youtube.com/watch?v=RV31PWYhe-M

This is the Canadian Federation of Nurses Union press release on PPE where they ask the government to start using elastomeric respirators and to stop using surgical masks since they are not effective at protecting health care workers.

https://nursesunions.ca/cfnu-welcomes-the-phacs-updated-infection-protection-and-control-guidance-for-acute-health-care-settings/

The Ontario Health PPE guidelines that came out on February 25, 2021 has additional information on elastomeric respirators compared to their December 21st update.

https://www.ontariohealth.ca/sites/ontariohealth/files/2020-05/Ontario%20Health%20Recommendations%20on%20Optimizing%20Personal%20Protective%20Equipment%20During%20the%20COVID-19%20pandemic_rev10May20%20PDF_v2.pdf

Some provinces like British Columbia have already fit tested every paramedic for an elastomeric respirator.

https://www.theprogress.com/news/covid-19-infection-rate-among-b-c-paramedics-almost-zero/

Some provinces like Manitoba have collaborated with other provinces and made specific guidelines to help the pubic understand more about elastomeric respirators and how to safely use them.

https://sharedhealthmb.ca/files/covid-19-reuse-of-elastomeric-respirators.pdf

Cities like New York have stopped buying N95s altogether and have switched to only buying elastomeric respirators for their first responders.

https://www.nydailynews.com/new-york/ny-fdny-new-covid-mask-protection-20201110-7ehwdcduwffcni3qigd2vp6dla-story.html

Cities like Winnipeg have done the same thing since April.

https://winnipeg.ctvnews.ca/winnipeg-firefighters-paramedics-now-wearing-reusable-respirator-masks-while-on-call-1.4891533

Since news organizations have not spoken about elastomeric respirators and the Federal government have not had elastomeric respirators on their radar, the public often has to find out through word of mouth to use them.

https://www.cbc.ca/news/canada/manitoba/dentists-flock-industrial-masks-1.5557799

Since the Ontario government has stayed silent on their stockpile of 100,000 unused elastomeric respirators, the federal government did not know there were respirators available that could have prevented the disastrous second wave in Ontario but that Ford was fighting unions to not have to distribute them.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

This is an OSHA document from 1994 talking about elastomeric respirators and how they should be used instead of fabric masks for infection control.

https://www.osha.gov/laws-regs/standardinterpretations/1994-05-25

Some NDP politicians like Don Davies, Carol Hughes and France Gelinas have known about a lot of the problems with elastomeric respirators including how the government had accidentally spread misinformation about the respirators being dangerous to use due to having an exhalation valve but they have refused to speak to other parties or the public about the problems occurring with elastomeric respirators, they have refused to correct their own comments about the respirators being too dangerous to use and they refused to let anyone know the exhalation valve could be covered and they were safe. They would not even ask the government to remove the misinformation even after I showed them the damage the NDP inaction was causing including in these two news articles.

https://www.cbc.ca/news/canada/marketplace-masks-test-1.5795481

https://www.ctvnews.ca/health/coronavirus/masks-with-exhalation-valves-don-t-protect-others-from-covid-19-health-officials-say-1.5063976

They were the politicians that helped me get the Ontario and Canadian government to originally look into using them to protect health care workers a year ago but they have refused to help connect me to politicians from the Liberal party so that the Liberals would know about the problems and fix them. After these news articles came out, Carol and France refused to admit they were wrong despite knowing they were spreading misinformation which had to be corrected by the journalist interviewing them and the pubic was assuming the misinformation as fact which lead to health care workers being actively prevented from using the respirators and mining companies no longer wanting to donate them.

https://www.northernontariobusiness.com/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

https://www.thesudburystar.com/news/local-news/sudbury-engineer-raising-awareness-about-n95-mask-alternative

30

October 21, 2022 email from Liberal MP Nathaniel Erskine-Smith's office to Nicholas Smit thanking Nicolas for providing the background into the widespread negligence that occurred around elastomeric respirators including the misinformation spread by Health Canada on their websites.

Source: Email communication

From: **Roos, Alyth (Erskine-Smith, Nathaniel - M.P.)** alyth.roos.407@parl.gc.ca
Subject: **RE: Follow up from MP Nate Erskine-Smith**
Date: **Oct 21, 2022 at 10:28:12 AM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hi Nicolas,

Thank you for providing all of this background! Would you be available for a virtual call at 1:30pm on Tuesday the 25th?

If not, let me know of what your schedule is like and we can sort timing out!

All the best,

Alyth

ALYTH ROOS
Parliamentary Intern
M.P. Nathaniel Erskine-Smith / Beaches-East York

beynate.ca / nathaniel.erskine-smith.a1@parl.gc.ca

Read and subscribe to Nate's non-partisan email newsletter
Listen and subscribe to Nate's podcast at uncommons.ca

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: October 21, 2022 10:15 AM
To: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Subject: Re: Follow up from MP Nate Erskine-Smith

Hi Alyth,

A virtual meeting with you is of interest. In order to better understand the concerns I will be talking to you about including Health Canada accidentally spreading dangerous misinformation, I have a few news articles that I worked with journalists in Canada and the US on that can help you better understand the background information.

This July 2022 New York Times investigation, goes into detail in how elastomeric respirators are the gold standard for infection control, have been used by healthcare workers as protection from deadly viruses since the 1990s, how each one can be safely reused for years, how the CDC has recommended them during every pandemic since SARS and that a large study with 2000 HCWs showed they were so popular that none of the 2000 HCWs wanted to stop using them after a 4 week trial and go back to using N95s.

https://www.nytimes.com/2022/07/03/health/covid-ppe-masks-health-care.html

This June 2021 CBC investigation into elastomeric respirators explains how Canadian hospitals are often unaware they are recommended as N95 alternatives, how the province of Ontario bought 100,000 of them from 3M in June 2020 (with federal money) only to keep them locked up for future pandemics and how the province said 22,000 were supposed to be in use but unions have not seen them actually being used.

https://www.cbc.ca/news/canada/ottawa/ottawa-covid-masks-protection-1.6053953

This December 2020 Radio Canada investigation into elastomeric respirators shows how as a result of the failure by Health Canada and Ontario Health to promote their recommendations to use elastomeric respirators as N95 alternatives hospitals and ltc homes experiencing N95 shortages continued to overlook using them despite having better protections than N95s. Union leaders explain how these respirators would have eliminated the N95 shortages and how it's inexplicable Ontario was keeping stockpiles locked up.

https://ici.radio-canada.ca/nouvelle/1756312/masques-p100-elastomeres-syndicats-sante

This Sudbury Star November 2020 news article includes an interview with NDP MP Carol Hughes. Carol was the MP to help me get the Federal government to look into recommending them for HCWs at the start of the pandemic. Carol had to be corrected by the journalist for spreading misinformation which Health Canada has continued to leave on some of their Covid PPE recommendations.

https://www.thesudburystar.com/news/local-news/sudbury-engineer-raising-awareness-about-n95-mask-alternative

This February 2021 news article is not one I was part of but it shows how the failure by Ontario Health and Health Canada to let the public know about their recommendations to use elastomeric respirators as N95 alternatives resulted in hospitals having to learn about their importance from workplace inspectors. These inspectors had to let hospitals experiencing deadly outbreaks combined with N95 shortages know they would not only offer better protection than N95s but would also eliminate their N95 shortages.

https://www.barrietoday.com/coronavirus-covid-19-local-news/waypoint-reports-fourth-death-as-staff-pleads-for-mpps-help-3318593

Kind Regards,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

From: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Sent: Thursday, October 20, 2022 5:05 PM
To: nicolas@ammaunited.org <nicolas@ammaunited.org>
Subject: Follow up from MP Nate Erskine-Smith

Hi Nicolas,

My name is Alyth and I am a member of MP Nathaniel Erskine-Smith's team. We received some of your concerns surrounding pandemic response and PPE. I would be happy to meet with you virtually and get a sense of your concerns.

Let me know if this is of interest!

All the best,

Alyth

31

October 25, 2022 email from Liberal MP Nathaniel Erskine-Smith's office to Nicolas Smit thanking Nicolas for the meeting they had that day and for sharing additional information about how widespread the negligence that had occurred at the federal level was.

Source: Email communication

From: **Roos, Alyth (Erskine-Smith, Nathaniel - M.P.)** alyth.roos.407@parl.gc.ca
Subject: **RE: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved**
Date: **Oct 25, 2022 at 4:06:34 PM**
To: **Nicolas Smit** nicolas@ammaunited.org

Hi Nicolas,

Thank you for passing this along and for meeting with me today.

I will be sure to pass this along to Nate and loop him in on our discussions!

All the best,

Alyth

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: October 25, 2022 3:19 PM
To: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Cc: nathanielerskine@gmail.com
Subject: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved

Hi Alyth,

It was a pleasure speaking with you. Below this email is the email I received from Doug Ford's office detailing their June 2020 internal investigation that lead to the purchase of 100,000 elastomeric respirators from 3M.

I've attached a detailed timeline of negligence and who was involved in the negligence.

While unions have been afraid to publicly fight for elastomeric respirators due to the close involvement of the NDP, the banner of the Ontario Nurses Association Facebook page features a HCW using one and at 36 minutes of this October 2020 town hall by ONA, you hear their CEO Bev Mathers explain elastomeric respirators offer more protection than N95s and the province was supposed to distribute 100,000 of them in the upcoming weeks.

https://www.facebook.com/OntarioNurses/videos/338042770785700/

This is the July 2020 House of Commons parliamentary committee meeting where Mario Possamai spoke about the failure to promote or use P100 (elastomeric) respirators.

https://www.ourcommons.ca/DocumentViewer/en/43-1/HESA/meeting-31/evidence

This is news coverage of the bureaucratic hurdles Canadian PPE manufacturers have faced.

https://montrealgazette.com/news/local-news/quebec-okays-locally-made-masks-after-bureaucratic-stall-required-u-s-approval

This is the news coverage of Quebec government buying 40,000 of the HCW versions of elastomeric respirators. The purchase ended up being for 80,000.

https://www.lapresse.ca/covid-19/2021-02-12/quebec-achete-40-000-masques-n99-a-dorma-filtration.php

At 2 minutes 8 seconds of this press conference from June 2020, Minister Navdeep Bains said the federal government was supposed to work with Dorma filtration to get their elastomeric respirator into the hands of Canadian HCWs to help end the N95 shortage.

https://m.youtube.com/watch?v=fByaHY7NNww

These Ontario government guidelines for ltc homes explains how workers are supposed to use the elastomeric respirators that were purchased from 3M. It also shows the government knew how to easily cover the valve.

https://www.ltchomes.net/LTCHPORTAL/Content/Snippets/Product%20Overview%20for%203M%207500-Series%20Reusable%20Elastomeric%20Respirator.pdf

This report by the Canadian Federation of Nurses Unions from September 2020 also explains how the government should be using elastomeric respirators because they offer more protection than N95s, are more comfortable and cost less. You can quickly find all mention of elastomeric respirators in the 270 pages by typing "elastomeric" into the search bar of the document.

https://nursesunions.ca/wp-content/uploads/2021/03/a_time_of_fear_possamai_final_book_digital.pdf

While most unions have refused to speak about elastomeric respirators on social media, CUPE Ontario leader Michael Hurley has and also explained how the locked up stockpile could eliminate transmission.

https://twitter.com/hurleyochucupe/status/1409994240785096706?s=46&t=4W7ZT15DN10Kz3t78jGrvw

I've tried to push unions to work with the federal government to expose the negligence and this tweet by Michael Hurley claims unions have spoken to all 3 parties about the need to expose the negligence.

https://twitter.com/hurleyochucupe/status/1428837078603808770?s=46&t=4W7ZT15DN10Kz3t78jGrvw

This is a tweet by Liberal MP Ryan Turnbull on the negligence and how it was supposed to be hard to ignore.

https://twitter.com/turnbullwhitby/status/1364064116810387457?s=46&t=4W7ZT15DN10Kz3t78jGrvw

Here is a tweet by Ryan confirming he repeatedly brought it up to the Liberal Caucus and to Ministers.

https://twitter.com/turnbullwhitby/status/1374736466266492930?s=46&t=4W7ZT15DN10Kz3t78jGrvw

This is a tweet by Ryan about how the Ontario government used federal money to buy the stockpile and it was appalling the province watched people die instead of use them.

https://mobile.twitter.com/TurnbullWhitby/status/1364068590677331969

I have also attached screenshots of PMs I had with Ryan where he confirmed to have repeatedly went to the Ministers about the need to come forward and pressure the Ontario government. One of the PMs also discusses how Ryan had to resort to internal letters to hopefully pressure the government to come forward with the negligence.

Cheers,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

From: Nicolas Smit <smitnicolas@hotmail.com>
Sent: Monday, April 11, 2022 2:09 PM
To: nicolas@ammaunited.org <nicolas@ammaunited.org>
Subject: Fwd: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Sent from my iPhone

Begin forwarded message:

From: "Morgado, David (OPO)" <David.Morgado2@ontario.ca>
Date: June 29, 2020 at 1:21:30 PM EDT
To: "smitnicolas@hotmail.com" <smitnicolas@hotmail.com>
Subject: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Please see below response.

P100 Respirators – Background and Current Status

Ontario does not prohibit the use of P100 respirators. Clinical guidance in Ontario, from the Chief Medical Officer of Health, is that the P100 is an alternative, equivalent product to the N95 respirator.

Health Guidance for alternative equivalent product to the N95 Masks:

Health Canada guidance lists P100 respirators as an alternative, equivalent product to the N95 masks. Specifically, Health Canada advises the following:

> "During the COVID-19 outbreak when medical-grade N95 or equivalent respirators aren't available, health care institutions may, at their discretion, purchase and use:
>
> - commercial-grade N95 (or P95 and similar) respirators
> - equivalents such as commercial-grade KN95 (or KP95) respirators
> - **other alternative, equivalent commercial-grade filtering facepiece respirators that are at least as protective as the commercial-grade N95, such as the N99, N100, P95, P99, P100, R95, R99, and R100 respirators.**
>   - P100 respirators are filtering, oil-resistant industrial respirators. These are similar to the N95 respirators, but their filter performance of airborne particles is greater than 95% (99.97%).
>   - N100 respirators have the same filtration performance as the P100 but are not oil resistant (similar to the N95)." (**emphasis added**)

Ontario's Chief Medical Officer of Health guidance for COVID+ and airborne precautions in acute care settings states "**N95 fit tested respirator, or approved or equivalent or better protection.**"

Use of 7500 series Half-Faced Elastomeric Respirators with P100 filters in Ontario:

During the course of the COVID-19 pandemic, the Ontario Government has looked towards sourcing alternative models to traditional N95 respirators.

This pursuit has included alternative NIOSH approved disposable models and reusable formats such as Elastomeric and Power Air Purifying Respirators (PAPR).

To date, the Province has purchased 100,000 units of **7500 series Half-Faced Elastomeric Respirators with 100,000 P100 filters**. A first shipment of 25,000 units arrived in Toronto and are in the MOEC warehouse week. The remainder of these respirators are expected to arrive by the end of July 2020. Ontario Health is in the process of determining how to allocate these shipments to hospitals.

Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.

Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

Thanks,

David Morgado

Executive Assistant to the Premier of Ontario
Office of the Premier of Ontario

From: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Sent: June 29, 2020 12:12 AM
To: Morgado, David (OPO) <David.Morgado2@ontario.ca>
Subject: FW: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

See below.

Rana Shamoon
Director, Health Policy I Office of the Premier

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 26, 2020 10:24 PM
To: Silva, David (MGCS) <David.Silva@ontario.ca>; MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Shamoon, Rana (OPO)

<Rana.Shamoon@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: Re: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Thank you very much, David.

Adding Rana Shamoon for her awareness.

P

Get Outlook for iOS

From: Silva, David (MGCS) <David.Silva@ontario.ca>
Sent: Friday, June 26, 2020 6:53:28 PM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>; Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Cc: Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Good Evening Allan and Patrick,

Responding on Heidi's behalf with the following update provided by the teams at MGCS, MOH and OH. Please let us know if you have any questions.

David

P100 Respirators – Background and Current Status

Ontario does not prohibit the use of P100 respirators. Clinical guidance in Ontario, from the Chief Medical Officer of Health, is that the P100 is an alternative, equivalent product to the N95 respirator.

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>   - P100 respirators are filtering, oil-resistant industrial respirators. These are similar to the N95 respirators, but their filter performance of airborne particles is greater than 95% (99.97%).
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Several Ontario hospitals have been using these Elastomeric respirators as an alternative and they have developed safe usage and sanitization guidance.
Health sector organizations will determine the appropriate setting for how and where these respirators can be used from a clinical workflow and patient safety perspective

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From: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Sent: June 26, 2020 9:15 AM
To: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>; Francis, Heidi (MGCS) <Heidi.Francis@ontario.ca>; Fraser, Melanie (MOH) <Melanie.Fraser@ontario.ca>; Longo, Peter <peter.longo@unityhealth.to>
Subject: RE: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Morning Patrick,

This is news to me. Let me ask the team for an update for us both.

Heidi - Can you coordinate an update w Mel and Peter?

A

From: Sackville, Patrick (OPO) <Patrick.Sackville@ontario.ca>
Sent: June 24, 2020 11:06 AM
To: MacDonald, Allan (CAB) <Allan.MacDonald@ontario.ca>
Cc: Shamoon, Rana (OPO) <Rana.Shamoon@ontario.ca>
Subject: Health Canada Application for P100 Respirator - Private, Confidential and Commercially Sensitive Advice to Cabinet

Hi Allan,

Rana Shamoon and I have received outreach regarding HC review of the P100 Respirator (please see attached).

The outreach suggests that Ontario has prohibited the use of this mask type, further suggesting that Ontario hospitals have abundant inventories of this type of mask. The issue HC is raising is that no application has been received to review/approve this product.

Are you able to help bring clarity to this?

Thank you for your help.

P

Patrick Sackville
Executive Director of Policy
Office of the Premier of Ontario
Patrick.Sackville@Ontario.ca

---------- Forwarded message ---------
From: **Nicolas Smit** <smitnicolas@hotmail.com>
Date: Tue, Jun 16, 2020 at 9:50 AM
Subject: Health Canada Approval of P100 Respirators

Hi XXXXXXX,

There is a serious issue in regards to PPE for health care workers which have just been approved by Health Canada that should get Doug Ford's immediate attention. I am forwarding this email from Health Canada which indicates why they have decided to approve P100 respirators 10 weeks after the Ontario government started saying they were dangerous and told hospitals they should not use their inventory of P100s under any circumstance.

This is a New York Time articles explaining P100 respirators in detail and why the US has used them for so long.

https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

This is a Northern Ontario Business article where Ontario Health Critic France Gelinas explains that Ontario hospitals have a lot of P100 respirators in their inventories but that the government has decided to not allow hospital staff to use them.

https://www.northernontariobusiness.com/regional-news/sudbury/sudbury-engineer-urging-mining-industry-to-donate-respirators-2273156

Here is an article that just came out about a month long test using thousands of P100s in Pittsburg hospitals.

https://www.mcknights.com/news/clinical-news/use-of-elastomeric-respirators-could-reduce-providers-need-for-n95-masks/

I am hoping Doug Ford and his team can look into this, talk to Health Canada and France Gelinas. I believe Doug Ford needs to hold a press conference to announce this new option for health care workers in hospitals and long term homes because there has been a lot of misinformation accidentally spread by the government and this needs to be addressed so that P100 are not feared.

Hospitals already have 10,000s of P100 respirators available so with a mandate from Doug Ford, front line workers could immediately have access to enough PPE to reduce the pressure on the system and lessen the worries of many Canadians. This will give Doug a huge win and give the province a boost of confidence that the virus is now under more control.

Kind Regards,

Nicolas Smit
46 Mary Ave
Naughton, On
P0M 2M0

Cell: 7056269863

Sent from my iPhone

Begin forwarded message:

From: "Boudreau, David (HC/SC)" <david.boudreau@canada.ca>
Date: June 12, 2020 at 10:28:32 AM EDT
To: "smitnicolas@hotmail.com" <smitnicolas@hotmail.com>
Subject: 20-108252-127 Response from the Medical Devices Directorate, Health Canada / Réponse de la Direction des instruments médicaux, Santé Canada

Hello, Bonjour, Mr. Smit,

Please see my attached response in regards to your June 8th correspondence.

Best regards,

David Boudreau, ing.
A Director General, Medical Devices Directorate
Health Products and Food Branch
Health Canada / Government of Canada
david.boudreau@canada.ca / Tel: 819-639-4117

Directeur général int., Direction des instruments médicaux
Direction générale des produits de santé et des aliments
Santé Canada / Gouvernement du Canada
david.boudreau@canada.ca / Tél: 819-639-4117

January 31, 2023 email from Liberal MP Nathaniel Erskine-Smith's office to Nicolas Smit apologizing for the extreme length it took to get answers from Health Canada and it shares the information Health Canada provided their office. Instead of correct the misinformation, Health Canada refuses to admit to the misinformation despite MP Erskine-Smith sharing direct evidence with them including the CDC studies showing even uncovered exhalation valves provide better source control than surgical masks. While the majority of Canadians aren't wearing any mask, Health Canada provides a baffling answer saying they cannot let the public know about elastomeric respirators because the presence of exhalation valves possibly meant that those wearing them could allow unfiltered air to get through and infect those around the wearer. Health Canada doesn't explain why surgical masks and cloth masks are recommended despite having less source control protection than elastomeric respirators or why they are worried about exhalation valves letting unfiltered air into the environment when most people are not wearing any mask at all and are constantly allowing infected air into the environment.

Source: Email communication

From: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) alyth.roos.407@parl.gc.ca
Subject: RE: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved
Date: Jan 31, 2023 at 12:44:11 PM
To: Nicolas Smit nicolas@ammaunited.org

Hi Nicolas,

I hope you are doing great! My apologies for the delay in my response. I have been actively following up with the ministry to ensure we can get answers to your website questions. I have since received the following updates from the ministry:

Heath Canada confirms that the guidance provided on our website regarding respirators with exhalation valves is still accurate.

- *Particulate filtering facepiece respirators (FFRs) provide 95% protection around the nose and mouth against exposure to respiratory viruses and bacteria when fit appropriately to the user's face. These respirators may or may not have an exhalation valve.*
- *Elastomeric respirators are a distinct type of respirators that are made of a molded facepiece to which a replaceable filtering cartridge or filter is attached. Elastomeric reusable filtering facepiece respirators may have exhalation valves incorporated into their design to help with breathability and comfort. Most of elastomeric respirators have exhalation valves, but not all.*
- *All Canadian-manufactured respirators, including elastomeric respirators, must meet the minimum performance testing requirements for biocompatibility; particulate filter efficiency; mechanical strength of the head strap or head harness; airflow resistance; and fit. These requirements have been outlined in Health Canada guidance.*
- *Any respirator, including an elastomeric respirator, that has an exhalation valve should not be used in a setting where environmental protection from the wearer is required, or unfiltered air from the user may contaminate the environment. For these reasons, respirators with exhalation valves are not considered acceptable for use during a pandemic. Exhalation valves allow infectious respiratory droplets to be released outside the respirators and will not protect others from COVID-19.*
- *There are additional safety considerations for elastomeric respirators. In addition to the minimum performance testing requirements, there are guidelines for particulate filtration efficiency and breathing resistance testing for the cartridge or filter as it is intended to be used. For example, if the filter or cartridge is attached to the elastomeric mask, then the test must be conducted with the entire device.*
- *These requirements have been outlined in Health Canada guidance to set out the safety, effectiveness and quality requirements for manufacturers of filtering facepiece respirators.*
- *Guidance has also been published to outline how health professionals may protect their own health by checking their respirator prior to use, such as checking that it forms a proper seal.*
- *In addition to information about respirators, the Government of Canada has also published information on improving indoor ventilation to help protect against the spread of COVID-19.*
- *In addition to information about respirators, the Government of Canada has also published information for the general public on the use of individual public health measures to help reduce the spread of COVID-19. These measures include staying home when ill, properly wearing a well-constructed, well-fitting mask in public indoor settings, improving indoor ventilation, performing regular hand hygiene and respiratory etiquette, and frequently cleaning and disinfecting high-touch surfaces and objects.*

Thank you for your time and all your correspondence!

All the best,

Alyth

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: January 9, 2023 11:45 AM
To: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Cc: nathanielerskine@gmail.com
Subject: Re: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved

Hi Alyth,

Thank you so much, it's greatly appreciated. Something that Nate should urgently flag to the Minister of Health, Minister of Foreign Affairs and the Prime Minister is the communication failures that happened across federal agencies in the US around elastomeric respirators.

In November I met with the Director of Infectious Disease and Preparedness at HHS/ASPR (our version of Health Canada) as well as their Director of PPE supply chain. Neither of them had ever heard of elastomeric respirators despite their roles in guiding the US pandemic response due to the compartmentalization of such valuable information even from key pandemic decision makers.

I've attached the informal report I did for a high ranking US official detailing the failures and the evidence of the massive communication failures so they could start internal investigations. Nate can share the report with the Liberal caucus so they can launch internal investigations of their own including into what the Canadian government knew.

If Nate can convince the Liberals to call out the failure by the US government to alert the international community to the importance of elastomeric respirators then the fallout of Health Canada spreading misinformation for the last 3 years won't look as bad. Canada's role in the communication failures would also not look as bad to the international community if the Liberals come out with a defense before journalists and the NDP expose what occurre.

Navdeep Bains, the former Minister of Science, Innovation and Industry held a press conference in June 2020 explaining how the Canadian government teamed up with a Canadian manufacturer of elastomeric respirators (Dorma) to eliminate the N95 shortage (at 2 minutes 10 seconds of video). The failure to use/promote elastomeric respirators meant N95 shortages and their impacts last a lot longer than necessary.

https://youtu.be/fByaHY7NNww

Since Health Canada didn't let the public know elastomeric respirators were in fact safe and refused to support domestic manufacturers, the majority of domestic manufacturers have now closed down including the one the government was supposed to team up with. The remaining domestic manufacturers are struggling significantly since people assume their masks are dangerous.

If the Liberals don't come out forcefully around elastomeric respirators to fix the many failures that occurred, it could easily look like the federal government purposefully kept valuable info from everyone. Liberal MP Ryan Turnbull went on social media in early 2021 and confirmed that the failure to use or promote elastomeric respirators cost a lot of people their lives, allowed transmission to easily spread through ltc environments and that this negligence was impossible to ignore.

https://twitter.com/turnbullwhitby/status/1364068590677331969?s=46&t=zQO7kP2bc48tmMALxwwjvg

https://twitter.com/turnbullwhitby/status/1364064116810387457?s=46&t=zQO7kP2bc48tmMALxwwjvg

https://twitter.com/turnbullwhitby/status/1360637001523986433?s=46&t=zQO7kP2bc48tmMALxwwjvg

Since MP Turnbull also went on the record to say he repeatedly spoke to the Minister of Health and Procurement about the need to promote elastomeric respirators and that they were superior to N95s, it will already be hard for the federal government to claim they didn't know there was a major problem happening or that it was costing a lot of people their lives which is why I'm hoping the Liberals can come out with a public statement this week.

https://twitter.com/turnbullwhitby/status/1374736466266492930?s=46&t=zQO7kP2bc48tmMALxwwjvg

Kind Regards,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

From: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Sent: Friday, January 6, 2023 10:01 AM
To: Nicolas Smit <nicolas@ammaunited.org>
Subject: Re: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved

Hi Nicolas,

My apologies for the delay in response - I have just returned from some time away from work.

I appreciate you looping me in on the status and progress of this work. I have forwarded the question surrounding the website and the lack of changes made to its information to the Ministry. I am hoping to get some answers or updates for you surrounding its correction. I will let you know as soon as I hear back and follow up on Monday if I have yet to hear back.

I appreciate your patience and communication on all of this!

All the best,

Alyth

From: Nicolas Smit <nicolas@ammaunited.org>
Sent: Tuesday, December 20, 2022 5:30 PM
To: Roos, Alyth (Erskine-Smith, Nathaniel - M.P.) <alyth.roos.407@parl.gc.ca>
Cc: nathanielerskine@gmail.com <nathanielerskine@gmail.com>
Subject: Re: Follow up to meeting with Mr Smit - detailed evidence of negligence including timelines and politicians involved

Hi Alyth and Nate,

I wanted to give you a big update. The Ontario NDP lead by MPP Kristyn Wong-Tam are going to try and get answers into the widespread negligence that happened in Ontario around elastomeric respirators. This is the letter the NDP sent to the CMOH this week.

https://www.kristynwongtam.ca/mooreletter

It's been several months since our meeting and since Health Canada has yet to even remove the misinformation I shared with you on their website, I am hoping Nate can issue a public letter asking Health Canada to update their information so that public pressure can move things along in a timely manner. Our hospitals are full and the delay in fixing the problem or the government performing basic due diligence continues to cost lives.

Since the Ontario NDP are finally confronting Doug Ford, I've asked Kristyn to let Jagmeet and the federal NDP know about it so they can ask for public investigations surrounding the negligence that happened at the federal level.

Since the Federal NDP are fighting for a public pandemic inquiry, the elastomeric respirator negligence will give the NDP a big reason to ask for an investigation.

To make sure the Liberals don't look bad for allowing such widespread communication failures and negligence to go on for 3+ years, I am hoping Nate can convince the Minister of Health and the PM to hold a press conference in the next week to let the public know about elastomeric respirators and their importance.

If the Liberals decide not to come forward on their own in the next week or update the Health Canada websites to remove the dangerous misinformation, I would work with Jagmeet and the federal NDP to let Canadians know through their own press conferences.

Kind regards,

Nicolas Smit

Executive Director

American Mask Manufacturer's Association (AMMA)

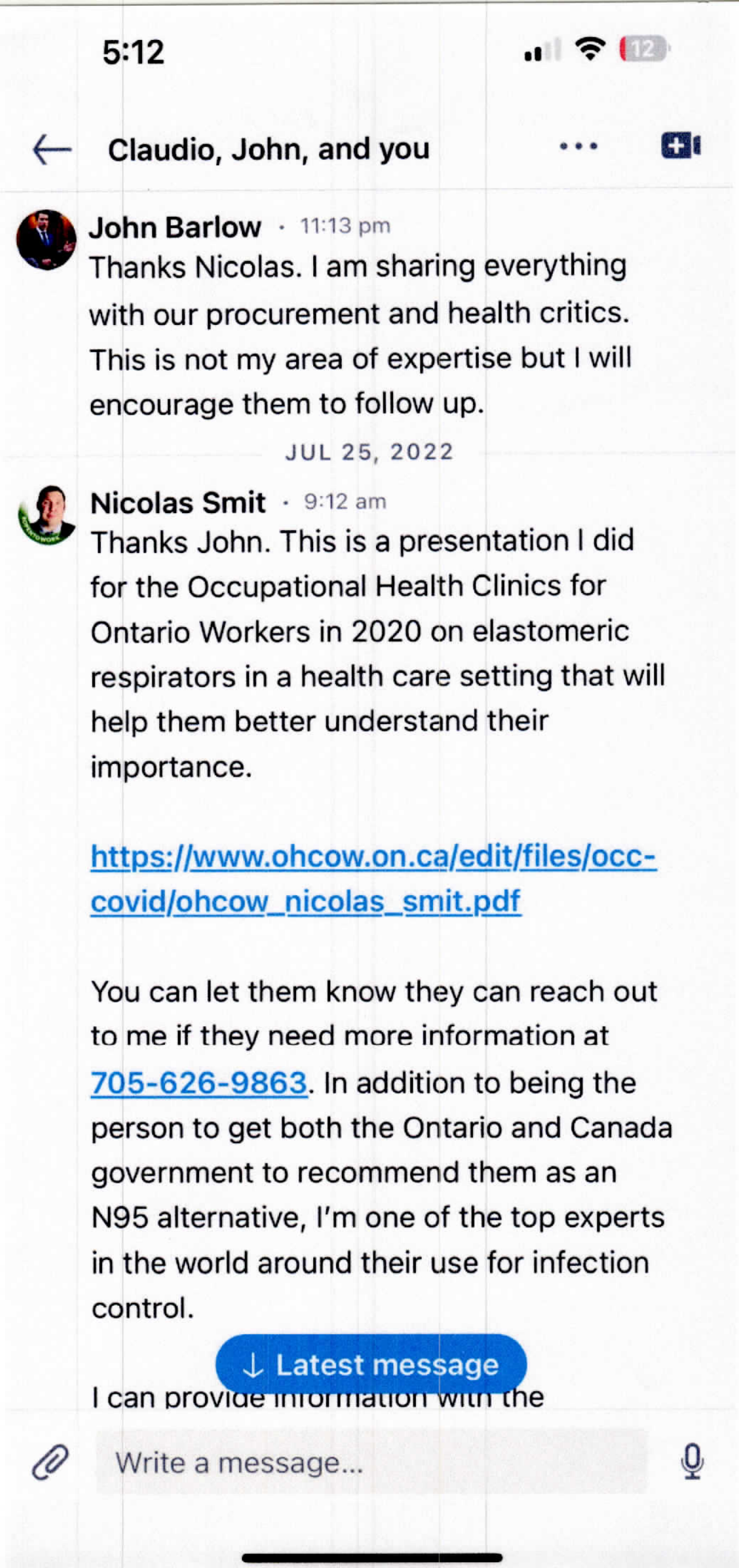
Cell: (705) 626-9863

Work: (276) 496-2662

Email: nicolas@ammaunited.org

July 25, 2022 LinkedIn private message by Conservative Party MP John Barlow letting Nicolas Smit know he had shared all the information Nicolas provided him about the widespread negligence by the federal government around elastomeric respirators to the Conservative Party MP's that are critics for Procurement and Health Care.

Source: LinkedIn private message



John Barlow · 11:13 pm

Thanks Nicolas. I am sharing everything with our procurement and health critics. This is not my area of expertise but I will encourage them to follow up.

JUL 25, 2022

Nicolas Smit · 9:12 am

Thanks John. This is a presentation I did for the Occupational Health Clinics for Ontario Workers in 2020 on elastomeric respirators in a health care setting that will help them better understand their importance.

https://www.ohcow.on.ca/edit/files/occ-covid/ohcow_nicolas_smit.pdf

You can let them know they can reach out to me if they need more information at 705-626-9863. In addition to being the person to get both the Ontario and Canada government to recommend them as an N95 alternative, I'm one of the top experts in the world around their use for infection control.

I can provide information with the

Section D

Evidence provided at government inquires and parliamentary committee meetings showing the government was repeatedly told about the need to publicly promote the importance of elastomeric respirators and the need to provide them to healthcare workers to stop the preventable deaths and injuries from continuing to occur

1

The SARS Commission Final Report titled Spring of Fear Volume 3 released in December 2006. This report explains how N95s and elastomeric respirators could protect healthcare workers from droplet and airborne transmission better than surgical masks. It also explains how elastomeric respirators provide better protection than N95s.

Source: http://www.archives.gov.on.ca/en/e_records/sars/report/v3-pdf/Volume3.pdf

2

House of Commons Standing Committee on Health transcript of evidence provided to MPs on July 6, 2020. The evidence shows that federal MPs from every party were warned by Mario Possamai, the lead SARS investigator for the government, about evidence showing airborne transmission was occurring, how the government needed to promote the importance of elastomeric respirators as well as start to put them into widespread use so that healthcare workers stopped being infected in such large numbers. Mario also talks about how the government mislead the public and healthcare workers about the importance of proper masks due to shortages, not because the information was accurate.

Source:
https://www.ourcommons.ca/Content/Committee/431/HESA/Evidence/EV10821628/HESAEV31-E.PDF

3

Transcript of the Long Term Care Covid-19 Commission interview of Mario Possamai on December 16, 2020. Mario explains how the province could've prevented a lot of the transmission that occurred in long term care homes had they used airborne PPE and that the province was still failing to promote the importance of elastomeric respirators or put them into any meaningful use. Mario also explains how alarming it was that the government had failed to act with any sense of urgency to protect workers and that the evidence showed it was negligent not to follow the Precautionary Principle and ensure widespread use of airborne PPE from the beginning.

Source: https://wayback.archive-it.org/17275/20210810150744/http://www.ltccommission-commissionsld.ca/transcripts/pdf/Mario%20Possamai_Transcript_December_16_2020.pdf

4

Legislative Assembly of Ontario transcript of Nicolas Smit's July 13, 2020 presentation to MPPs for the Standing Committee on Finance and Economic Affairs meeting on the effects of Covid-19 on Ontario industries. He explains the importance of elastomeric respirators, the negligence that had occurred to date, how they were readily available and could be used to protect workers in a lot more industries than just health and long term care, how MPPs needed to ensure the 100,000 Doug Ford's office had bought the month prior be distributed, how MPPs needed to ensure the public learn about the government recommendations to use them as N95 alternatives and the misinformation the government had been spreading so that healthcare workers would stop being actively prevented from using them.

Source: https://www.ola.org/sites/default/files/node-files/hansard/document/pdf/2020/2020-08/13-JUL-2020_F040.pdf

5

Legislative Assembly of Ontario transcript of Nicolas Smit's April 5, 2022 presentation to MPPs for the Standing Committee on Finance and Economic Affairs meeting on Pandemic and Emergency Preparedness. He spoke about his work with the highest levels of the U.S. government including a federal task force for President Biden he sat on, the pandemic work he did in Canada, the widespread negligence caused by the province around elastomeric respirators plus the many implications it had for the safety of workers and the public. He also alerted the MPP's to Doug Ford's office purposefully withholding 100,000 elastomeric respirators and that this caused significant harm to workers.

Source: https://www.ola.org/sites/default/files/node-files/hansard/document/pdf/2022/2022-04/05-APR-2022_F016.pdf

1

The SARS Commission Final Report titled Spring of Fear Volume 3 released in December 2006. This report explains how N95s and elastomeric respirators could protect healthcare workers from droplet and airborne transmission better than surgical masks. It also explains how elastomeric respirators provide better protection than N95s.

Source: http://www.archives.gov.on.ca/en/e_records/sars/report/v3-pdf/Volume3.pdf

THE SARS COMMISSION

Final Report

Pages 874–1204

Spring of Fear

Volume 3

December 2006

> Yes, NIOSH approved N95 respirators/masks or equivalent meet and exceed the TB mask criteria.
>
> If your health care facility masks meet the filter and fit criteria of #4 (above), they can be considered equivalent to TB masks.[962]

An April 11, 2003, document prepared by the Ministry of Health and Long-Term Care and entitled "Questions and Answers" took a similar position:

> Q3. Are the PCM 2000, P-95 and R-95 masks equivalent to the N95 mask?
>
> A3. Yes.[963]

An article by Toronto experts in the *Canadian Journal of Anesthesia* contained in a footnote the following description for a PCM 2000 mask:

> N95-equivalent mask … [964]

An article published in a British medical journal in June 2003 and written by three experts at a major Toronto teaching hospital also appears to suggest that the PCM 2000 is equivalent to an N95:

> As a result of the transmission of SARS to health workers, N95 (or equivalent) masks are currently mandatory in Toronto for all medical personnel. They fulfill the filtering efficiency criteria of the National Institute for Occupational Safety and Health (NIOSH) N95 standard by protecting against droplet and airborne transmission of 95% of particles greater than 0.3 microns in size. These masks will offer a high degree of protection against the contact and droplet spread of the coronavirus. The N95 masks should be fit tested using an appropriate "fit test kit" according to the manufacturer's instructions. The PCM 2000 Tuberculosis masks meet the N95 filtration criteria and fit the majority of wearers adequately. They do not require routine fit testing. N95 masks can be worn continuously for 8 h whereas PCM 2000 masks can only be worn continuously for 4 h.[965]

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[962] Health Canada, "Infection Control Guidance for Respirators (Masks) Worn by Health Workers – Frequently Asked Questions – Severe Acute Respiratory Syndrome (SARS)," revised 2003-06-05.

[963] http://www.health.gov.on.ca/english/providers/program/pubhealth/sars/docs/qa_041103.pdf

[964] "Intubation of SARS patients: infection and perspectives of health workers," *Canadian Journal of Anesthesia* 53 (2006).

[965] "Anaesthesia and SARS," *British Journal of Anaesthesia*, 90 (2003).

Experts at another major teaching Toronto hospital took a similar position, suggesting that PCM 2000 masks, even though they were not NIOSH approved, were the equivalent of N95s because they had the same technical specifications. One expert at this hospital told the SARS Commission:

> … because we didn't know what we were dealing with, so we went with an N95 equivalent mask, which had been our mask for TB … for decades. The brand is PCM 2000 masks, and they're N95-equivalent. They're not NIOSH-approved masks, but they have the same filtration … The manufacturer would tell us what filtration the mask has …

This infection control expert noted that PCM 2000 masks met Health Canada's guidance:

> We were confident in them, and they were widely used across Canada, and Health Canada had no problems with those masks.

The Ministry of Labour took a very different position on what was equivalent to an N95. It told the Commission that it accepted the term "equivalent" in directives because this allowed health workers to also use the protection of higher-rated NIOSH-approved respirators like the N99 or N100.[966]

One ministry official told the Commission:

> Now, if somebody uses an N99 or an N100, they are equivalent and would provide even higher protection.

This approach was reflected in a document that the Ministry of Labour prepared for its staff, which appears to have been issued in early April:

> Problem: Refusal to work with or serve a patient, client or inmate with possible SARS and symptoms e.g. fever, cough, history of travel or contact with confirmed SARS case, in healthcare setting or in corrections facilities.
>
> Solution: Health care facilities and corrections facilities must implement the infection control measures required by MOHLTC and public health units. These include gloves, gowns, **N95 or better respirators**, eye protection, hand-washing facilities, plus the appropriate training and respirator fit testing.[967] [emphasis added]

---

[966] The minimum efficiency of each tested filter is to be greater than or equal to 99.97% for N100 filters and 99% for N99 filters.

[967] Document entitled "SARS Scenarios" which was attached to a copy of the Ministry of Labour's SARS protocol which it provided to the SARS Commission in the course of its submission at the public hearings.

Ministry of Labour officials told the Commission that they would have preferred to have seen the phrase "N95 or better" in the directives. But the directives continued to refer to "N95 or equivalent."

The Ministry of Labour said it would not, without appropriate independent testing, accept the manufacturer's specifications as being sufficient proof that a respirator was equivalent to one certified by NIOSH.

During SARS, the Ministry of Labour was asked whether a European-approved respirator was an N95 equivalent. At the time, there was concern about supplies of N95 respirators and officials wondered if there might be appropriate substitutes in Europe. A Ministry of Labour official consulted with NIOSH, learned that the European test was less rigorous than NIOSH's and was told NIOSH would accept the European respirator only if it passed its own tests.

This official told the SARS Commission:

> So the question is: Is that equivalent?
>
> Now, certainly at the Ministry of Labour, we don't have a laboratory that's testing respirators, approving respirators. We don't have people that are doing the research and so we're going to rely on NIOSH.
>
> And if NIOSH had said to us their professional opinion is it is equivalent, then we would have considered making a statement to say we've done some research, we consulted with an expert in the field and we have concluded that, you know, it is equivalent or it is adequate.
>
> And NIOSH was being very, very careful. And the position that NIOSH was taking is that the efficiency is not the same and certainly the European respirator was less efficient.
>
> Now the only way NIOSH would be willing to make a comment would be if [the manufacturer] would submit their respirator to NIOSH, have it go through the N95 approval testing and if it met the criteria then they would be issued, I guess, approval as an N95.

The debate over what was an equivalent respirator continued after SARS.

On March 3, 2004, one Toronto hospital wrote to the Ministry of Labour after it had issued an order requiring the hospital to provide health workers with NIOSH-approved respirators, and not the PCM 2000:

> Further to our discussion, our Infection Prevention and Control department wanted to get clarification on the MOL order regarding change to "N95 or better" in our policies.
>
> - Can you indicate the specific regulation or standard that is the basis for the MOL requirement that N95 is the minimum protection and other masks without the N95 under the NIOSH criteria are not acceptable e.g. PCM 2000
>
> - Can you provide the evidence that supports the MOL's requirement

On March 23, 2004, the Ministry responded:

> The inspector's order gives the regulatory requirement. The contravention is of the compliance order issued.
>
> The CSA Standard Z94.4-02 Selection, Use and Care of Respirators G4.3.1, page 67, indicates there are three filter efficiencies for non-powered particulate removing respirators (95%, 99% and 99.97%) and one efficiency for powered air-purifying respirators (99.97%). A P100 respirator has better filter efficiency than an N95 and is acceptable for use. A powered air-purifying respirator with a 99.97% efficient filter also has better filter efficiency than a N95.
>
> The CSA Standard Z94.4-02 Selection, Use and Care of Respirators 2.1, page 1, indicates an accepted respirator to be a respirator tested and certified by procedures established at testing and certification agencies recognized by the authority having jurisdiction. The Ministry of Labour, as that authority, recognizes NIOSH testing and certification. The N95 respirator or respirator with better filter efficiency must be tested and certified by NIOSH.
>
> There are several reasons the Ministry of Labour recognizes NIOSH testing and certification:

2

House of Commons Standing Committee on Health transcript of evidence provided to MPs on July 6, 2020. The evidence shows that federal MPs from every party were warned by Mario Possamai, the lead SARS investigator for the government, about evidence showing airborne transmission was occurring, how the government needed to promote the importance of elastomeric respirators as well as start to put them into widespread use so that healthcare workers stopped being infected in such large numbers. Mario also talks about how the government mislead the public and healthcare workers about the importance of proper masks due to shortages, not because the information was accurate.

Source:
https://www.ourcommons.ca/Content/Committee/431/HESA/Evidence/EV10821628/HESAEV31-E.PDF

HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

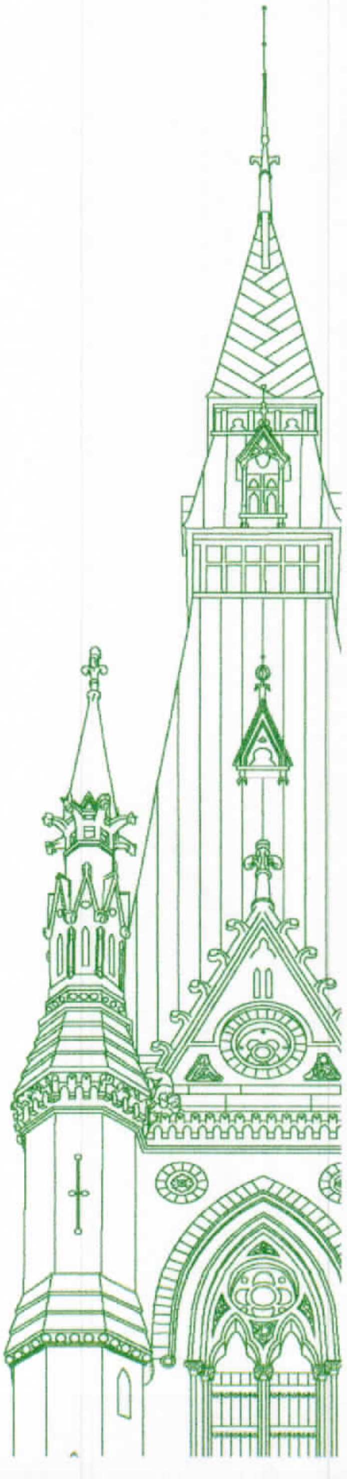
43rd PARLIAMENT, 1st SESSION

Standing Committee on Health

EVIDENCE

NUMBER 031

Monday, July 6, 2020



Chair: Mr. Ron McKinnon

Dr. Halperin, according to a May 19 news release from Dalhousie University, the National Research Council will work with manufacturers so the vaccine can be produced and distributed here at home—or, hopefully, a vaccine, if it proves to be successful. Are you confident that Canada has sufficient domestic manufacturing capacity to produce a sufficient supply of vaccines for all Canadians, particularly if we have to have booster shots and extensive revaccinations?

Dr. Scott Halperin: Manufacturing capacity in Canada is one of the biggest concerns, and that was highlighted very early on in the pandemic, and before. Part of the funds that the government announced early on in the pandemic were to be provided to the National Research Council, NRC, to upgrade its facility in Montreal. This will permit it to do what's called a GMP, or a good manufacturing process, when manufacturing the vaccine. Based on that, my understanding is that it will be able to supply the needs with CanSino's vaccine.

Now obviously that's not the only vaccine that's being developed. My understanding is that each manufacturer, when it's doing studies and getting supported, in order to get support from the Canadian government, has to demonstrate what its plan is for manufacturing. Whether they are proposed vaccines from Medicago or VIDO-InterVac, all have to look at the manufacturing capacity.

I think manufacturing capacity will be an issue. Obviously, the larger multinationals, such as Sanofi Pasteur, which Dr. Neame mentioned, certainly have the manufacturing capacity.

Dr. Dion Neame: If I could add as well, and I apologize for jumping in on Dr. Halperin's question, but the fact is that this is where collaboration occurs. To produce 60 million doses of infant vaccines each year on the Toronto site, this is where we have to sit down and talk. We could potentially retrofit something at the Toronto site, which could help out. It's all about Canadians and getting vaccines for Canadians.

Mr. Don Davies: To each of you doctors, then, would you recommend that the federal government develop a national plan in order to ensure that we have domestic manufacturing capacity for any vaccine that, hopefully, will be developed for Canadians?

Dr. Scott Halperin: Absolutely. As I mentioned in my initial comments, that's part of it. We all know what the steps are in order to get vaccines to individuals. Hopefully, all of that is being worked on simultaneously. There is now a vaccine task group that's been tasked to oversee the process, and manufacturing is clearly on its radar.

Dr. Dion Neame: Just remember there are actually companies like GlaxoSmithKline. GlaxoSmithKline has a great pandemic plan. The only problem is it's for influenza. We didn't expect it for COVID. There needs to be some expansion on the infectious diseases that we're covering in pandemic plans.

● (1240)

The Chair: Thank you, Mr. Davies. That brings round two to a close.

I'd like to thank all the witnesses for sharing your time with us today, and for your expertise. This is most helpful to our study.

We will suspend, and bring in the next panel.

● (1240)

(Pause)

● (1255)

The Chair: The meeting has resumed.

I'd like to welcome back everyone to meeting number 31 of the House of Commons Standing Committee on Health. Pursuant to the order of reference of May 26, 2020, we are continuing a briefing on the Canadian response to the outbreak of the coronavirus.

I'd like to make a few comments for the benefit of the new witnesses. Before speaking, please wait until I recognize you by name, except during questioning. I'll ask the questioners to indicate whom they wish to respond to the question. When you're ready to speak, you can click on the microphone icon to activate your mike. I remind you that all comments should be addressed through the chair.

Interpretation in this video conference will work very much like in a regular committee meeting. You have a choice, at the bottom of your screen, of floor, English or French. As you are speaking, if you plan to alternate from one language to the other, you will need to switch the interpretation channel so it aligns with the language you are speaking. You may want to allow for a short pause when switching languages.

When you're not speaking, your mike should be on mute.

I'd like now to welcome our second panel of witnesses. Appearing as an individual we have Mario Possamai, who was senior advisor, Commission to Investigate the Introduction and Spread of Severe Acute Respiratory Syndrome, 2003-07; for Mapsted, we have Paramvir Nagpal, founder and chief executive officer; for Medtronic Canada, we have Patrick Hupé, senior director, health systems strategies.

I will ask the panellists to make their statements. Each group will have up to 10 minutes.

We'll start with Mr. Possamai. Please go ahead.

Mr. Mario Possamai (Senior Advisor, Commission to Investigate the Introduction and Spread of Severe Acute Respiratory Syndrome (SARS), 2003-2007, As an Individual): Good afternoon, Mr. Chair, and members of the committee. Thank you for the opportunity to brief you on how COVID-19 has revealed that the system to protect Canadian health workers during a public health emergency is broken, and must be fixed urgently before the expected second pandemic wave.

From the start of the outbreak, the Public Health Agency of Canada has said that droplet precautions, including surgical masks, are sufficient protection for our health care workers, because COVID-19 could not spread through the air, and only spreads through large droplets.

In those early days, Canadian experts who supported the agency's position said that if COVID-19 was airborne we would see outbreaks in places adhering to droplet prevention. One expert said that if this was airborne, all those health care workers would be getting sick.

Here's what's happened since. Nationally, Canadian health care workers comprise nearly one in five of all COVID-19 infections in Canada. That is almost three times the global average as reported by the International Council of Nurses.

It is also approximately four times the rate in China where there was a requirement for the use of airborne precautions, including N95s, in late January. Most health work infections in China occurred before these higher precautions were implemented. This troubling situation is why I have been retained by the Canadian Federation of Nurses Unions to use the lens of the SARS commission to investigate why so many Canadian health care workers are being infected. While the investigation is at an early stage, I would like to share some preliminary findings and recommendations.

The first preliminary finding is regarding the precautionary principle, and the question of airborne transmission. When your committee met on April 7, dedicated Canadian experts, with the best of intentions, said that COVID-19 only spreads through large droplets and contaminated surfaces, and that surgical masks were sufficient protection. N95s, they said, were only needed for high-risk procedures. Since then, the science has evolved. The researchers in Hong Kong, who first identified SARS airborne transmissibility in 2004, have recently published a peer-reviewed article suggesting that large droplets are a negligible transmission route compared to airborne.

The CDC in the U.S. is now suggesting that infected surfaces may only play a minor role in COVID-19 transmission, and most importantly, an open letter published today by 239 scientists from 32 countries, the WHO and public health agencies, states that studies have demonstrated beyond any reasonable doubt that the viruses are released during exhalation, talking, and coughing in microdroplets, small enough to remain in the air, and impose a risk of exposure at distances beyond one to two metres.

Time will tell who is right and who is wrong in this debate though I believe the scales are increasingly tipping toward the growing evidence of airborne transmission. This is precisely the kind of situation where the precautionary principle and the findings of the SARS commission should be invoked. When there's uncertainty about a new pathogen, it calls for erring on the side of safety, and protecting health workers with the higher protections of airborne precautions, including N95s or higher, until the science is clarified. This is what China has done so successfully, and that is why the WHO has concluded that the transmission of COVID-19 among health workers and in health care settings is not a factor in China.

Keep in mind that it was not until a year after SARS that the best evidence of its airborne transmissibility under certain conditions was published. Justice Archie Campbell, who led the SARS commission, found that this was strong validation of the prudence of taking a precautionary approach until the science was settled.

● (1300)

Having regard to growing evidence of airborne transmission and with news that domestic production of N95s is coming on stream, I recommend that the Public Health Agency of Canada invoke the precautionary principle and require airborne precautions, including fit-tested N95s for all health care workers in all health care settings with suspected and confirmed COVID-19 cases. I also recommend that the federal legislation be amended to require the agency to take a precautionary approach to all worker safety guidance.

The second preliminary finding is with regards to our severe shortage of N95 respirators. Even though the SARS commission recommended stockpiling this vital piece of equipment, the federal health minister and the chief medical officer of health have claimed stockpiling was a provincial responsibility. I respectfully disagree. Ottawa destroyed two million N95s last year. It should have replaced them and purchased more, as the Prime Minister now seems to concede. Remember the federal stockpile had only 100,000 N95s entering the pandemic.

But setting this aside, I believe the chief medical officer of health and her immediate predecessor failed in their responsibility under section 12 of the Public Health Agency of Canada Act to warn Parliament and Canadians that we weren't ready, that we didn't have enough personal protective equipment, especially N95s.

When Dr. Tam's office and that of her Ontario counterpart were being established in 2004, Justice Campbell advised both governments to make chief medical officers of health the public guardian by giving them the rights, duties and independence to speak out on public health risks. Both levels of government listened and the wording of section 12 of the federal act and the equivalent section 81 of the Ontario act are virtually identical. Over the past five years Dr. Tam and her immediate predecessor have issued seven reports to Parliament and the public on a variety of important public health issues, including on alcohol and substance abuse. None, however, examined whether we were ready for an existential public health threat like the pandemic, including whether we had enough N95 respirators, despite the explicit intent of the act.

Let me illustrate all this with very specific examples. Digital health care does not just allow physical distancing, it is also an incredible tool for communicating with patients in remote locations. For example, a patient, a veteran or a member of a First Nation, who wears a pacemaker must have a check-up several times a year, with each appointment taking about 10 minutes. If that patient lives in the far north or in a remote region of our country, it can take him hours, even days, to get to the clinic. Using a form of digital technology that has existed for years and that involves an examination done remotely, reduces the risk of infection, reduces costs, and increases the efficiency of the services. Until now, that option was limited, because physicians could not bill for their services or because patients had no access to a stable Internet connection. Those two concerns can certainly be fixed with the support of the federal government.

Furthermore, in order to have access to the technologies and the solutions that help patients to obtain better care in a timely fashion, the government must focus on procurement. The pandemic actually proved beyond any doubt that procurement is not just a menial job that is simply about acquiring things. It requires men and women with a strategic vision, with a good understanding of the technologies that are needed, and with a solid foundation in new value-based procurement concepts. Those concepts, after all, have been adopted elsewhere in the world, particularly in Europe.

During the pandemic, the federal government took two steps in procurement. First, it centralized procurement, especially for ventilators and personal protective equipment. Once free from a part of that burden, hospitals and industries were therefore able to concentrate on what they do best, which is taking care of patients. Then, the government began to implement innovation policies focused on demand.

Historically, the federal government has focused on the supply of innovation rather than on the demand. For more information on this subject, you can read the article by Neil Fraser, the president of Medtronic Canada, in *Longwoods*. Right now, I can tell you that innovation policies focused on demand involve asking for and obtaining solutions, not just products. That is exactly what the federal government did when it launched Canada's Plan to mobilize industry to fight COVID-19.

By implementing innovation policies focused on demand, the government was beginning to follow the recommendations of the Economic Strategy Table for health and bio-sciences that the government established in 2017, with the Department of Innovation, Science and Economic Development collaborating with Health Canada. This crisis has shown us all the importance of having a more advanced manufacturing sector in Canada. I would say that the government can achieve that by re-examining the recommendations of the Economic Strategy Table for health and bio-sciences.

● (1325)

I would like to end with integrated health solutions.

In our search for solutions to improve our health care system, one of the greatest challenges facing the federal and provincial governments is to find a solution to eliminate the incredible delay in surgeries and diagnostic procedures, and to avoid other deaths because of those delays.

Before the virus emerged in Canada, hospitals were already operating in a complex environment. The way forward will be increasingly difficult if we do not act quickly. Hospitals also have to adapt to the new expectations of patients who have seen the advantages of virtual care, as opposed to being afraid to stay too long in a waiting room.

Despite everything, there is hope and a huge amount of optimism. Let me give you some specific examples. One is the Fraser Health Centre in British Columbia, which now conducts patient evaluations virtually, before they are admitted. In Ontario, virtual care is used for more than 50% of the patients at the Peter Munk Cardiac Centre. In New Brunswick, the Vitalité Health Network has established a specialized drive-through clinic for pacemakers, in order to reduce the growing number of patients waiting to have their cardiac devices checked.

Medtronic Canada has the expertise and the tools needed to help the government to develop those kinds of new protocols and thereby to create patient-centred health care pathways. These will help health care systems meet the new challenges and the new expectations. We are determined to deliver the results that we have promised.

On behalf of Medtronic Canada, I would like to thank you once more for making it possible for me to share my comments. I hope that this session today is just the beginning of a concerted initiative that will call on the leadership and the courage of our governments, the expertise of our academia, and the resilience, experience and ingenuity of Canadian companies and their international affiliates that have chosen to invest here in Canada. The benefits will be seen in the health of all Canadians.

● (1330)

[*English*]

The Chair: Thank you.

We will start our questioning now. We will undertake two rounds of questions. We will start the first round with Dr. Kitchen.

Dr. Kitchen, please go ahead for six minutes.

Mr. Robert Kitchen: Thank you, Mr. Chair.

Thank you, everybody, for your presentations. They are greatly appreciated.

Dr. Possamai, I really appreciate your being here and the work you did with the SARS Commission, because that facilitated the start of PHAC, as you mentioned a little earlier today, and the setting up of protocols and policies to deal with pandemics. We've seen that not only has Canada done that, but other parts of the world did that at that time.

Taiwan did exactly the same thing, and they implemented those policies and procedures from day one, right from the very start. My colleagues and I brought forward, a number of times, with the minister as well as the government, the issues of shutting down the borders, using face masks, testing, etc. As I said, Taiwan closed its borders and utilized masks and temperature screening from day one, and they've done a tremendous job in reducing the impact of COVID-19 and the number of deaths.

I have a question on the issue of temperature screening. Last month, the committee questioned officials from Transport Canada regarding the effectiveness of temperature screening for travellers during the COVID-19 pandemic, specifically at airports. Dr. Tam herself has said that when it comes to SARS, temperature screening was ineffective. My colleagues and I asked the Transport Canada officials to provide us with new, scientific evidence that would support the effectiveness of temperature screening. However, they've only provided what seems to be an opinion piece, without any scientific paper. They state, "The greater number of COVID-19 cases increases the likelihood of temperature screening effectiveness".

From your experience and your review of the SARS epidemic, I'm wondering what scientific data proved the effectiveness of temperature screening.

Mr. Mario Possamai: That's a very good question. During SARS, there was some work on temperature screening, but it was inconclusive, and the information was that it appeared to be ineffective. This occurred over a short period of time. The equipment at the time was not as effective as it is today, so I think that it warrants, in a very speedy fashion, an examination of what the best technology is and whether it works.

One of the things I've noticed with PHAC is a lack of urgency to look at new technologies, to examine the best way to address this, and I think this may be an example.

Mr. Robert Kitchen: Thank you.

You indicated the fact that temperature screening can produce inaccurate results for a variety of reasons. They could include improper calibration of the machine, user error and environmental variations—the technology has changed, obviously—which could lead to false positives and false negatives that create incorrect data for scientists, as well as a potential risk to public health in general. Do you have concerns, not just about the effectiveness of temperature screening overall, but also about the integrity of the data collected?

Mr. Mario Possamai: You know, I'm not an expert in this area, so I don't want to speak on it. I do think the whole issue of border control is one that needs to be controlled in depth. What's the best way to do that? What's the best way to monitor movement? Is it the technology, as mentioned by the witness from Mapsted? I think we need a really holistic approach to examining the best way to do this.

● (1335)

Mr. Robert Kitchen: You did talk a little bit about masks. We're aware of the issue of droplets versus airborne transmission and the fact that certain masks meet certain standards. There's the standard mask that we see people walking around with today, which is just a cloth that basically keeps the droplets in but doesn't necessarily protect you from what's out there. We also talk about the N95. Obviously, the reason it's called N95 is that that's the percentage it reduces. We even talk about N99.9 masks that are out there.

These masks that are there, should we be using them today? Should it be something on the issue of...? Yes, N95s are of value in certain areas where there is a much greater risk, but is that a value that we see in the public?

Mr. Mario Possamai: That's a really great question. Dr. Osterholm of the University of Minnesota has raised this issue. He is in fact working on a plan to be able to create, for the public, masks that are as protective as N95s. I think that should be our goal. I think everyone should be protected, if the equipment is available, to the same level as health care workers.

This darn COVID-19 is extremely infectious. I think airborne infection is a real risk. I think our goal should be to protect everyone to the N95 level. I think Dr. Osterholm's project is a great way forward in that direction.

Mr. Robert Kitchen: In the CFNU press release, you're quoted as saying the following:

> The SARS Commission provided clear recommendations on worker safety and infection containment, lessons that have been overlooked in this pandemic. It is our hope that this investigation, prompted by the CFNU, will yield unequivocal, evidence-based recommendations that are urgently needed to prepare Canada and frontline workers for the next wave of COVID-19.

What are the barriers when it comes to knowledge transfer on the lessons learned from the previous pandemics and epidemics?

Mr. Mario Possamai: That's a great question. I think one of the problems is that PHAC and other public health agencies in Canada, and the WHO as well, don't have the kind of diverse knowledge and expertise that we need. They have very good knowledge in terms of epidemiology, but they really need to have broader knowledge on worker safety expertise, and also expertise on aerosols and aerosol transmission. For example, two of the top people in the world on aerosol transmission are Canadians. They are Dr. Raymond Tellier in Montreal and Dr. Lydia Bourouiba at MIT. They should be at the table. They should be involved with PHAC in developing the kinds of policies and procedures that could protect our workers.

I would recommend that there be a real review to ensure that PHAC's expertise is expanded and really reflects the latest science. A lot of the science that PHAC and WHO are relying on when it comes to disease transmission dates back to the 1930s and 1940s, when instruments were not good enough, sensitive enough, to measure aerosol transmission. The science has made incredible progress in looking at small aerosol transmission, but that expertise is not at the table at either PHAC or WHO. I would recommend that they really expand their knowledge base.

My last point is that we should look at the CDC. The CDC has two components. One is NIOSH. NIOSH is dedicated to worker safety. PHAC should have the same type of independent, very strong, very well-resourced and well-staffed expertise to look at this. We have Canadians who can do that, and we should bring them on board.

The Chair: Thank you, Dr. Kitchen.

We'll go now to Mr. Longfield.

Mr. Longfield, please go ahead for six minutes.

Mr. Lloyd Longfield (Guelph, Lib.): Thanks, Mr. Chair.

Thank you to all of the witnesses. I wish we had more time, but that's always the struggle we have.

I'm going to start with Medtronic, then go to Mapsted and then, time permitting, finish up with Mr. Possamai.

Mr. Hupé, it's great to have you here. You mentioned Ventilators for Canadians. We have a couple of Guelphites who are helping out on that project: Jim Estill from Danby and Rick Jamieson from ABS Friction. I had early discussions during the pandemic with Jim Estill about the war approach to treating industrial problems and sharing information in order to work together on problems.

However, one of the issues we studied on the industry committee is intellectual property. I wonder how you see intellectual property being managed and shared in the health sector as we go through the COVID crisis.

● (1340)

[*Translation*]

Mr. Patrick Hupé: Thank you for your question, Mr. Longfield.

Actually, as far as we're concerned, we haven't really had any intellectual property issues.

There are different types of ventilators. There are portable ventilators, which are mainly used by the military in case of emergency and allow evacuation of people in the field. If more advanced care is needed, there are much more sophisticated devices, with thousands of parts and very advanced technology.

There really is a whole spectrum of devices from the simplest to the most elaborate. So that needs to be taken into account. So it may be wrong to believe you can convert factories very quickly for the type of device that is at the extreme end of the spectrum in terms of complexity.

However, I won't go into detail, but devices with what could be described as fairly average technology, which aren't overly elaborate or as simple as the technology found in the armed forces and used in the field, are readily available to people. We've released this type of device around the world, and I think it's been a win for Canada, as we've seen Ventilators for Canadians take up this opportunity.

[*English*]

Mr. Lloyd Longfield: Thank you.

I come from a pneumatics background. I know that when you're operating under low pressure and low flow, which is what the lungs do, it makes for some challenges. You also need a fail-safe to make sure that if the unit doesn't work properly, there are ways to continue without starving the patient for air.

When working with universities and academics, developing and innovating, we've had challenges in the past in Canada to transfer intellectual property without other countries buying our intellectual property and then selling it back to us so that we have to manufacture under licence. Are you manufacturing under licence at your place, or are you working within the ideas from Canadians?

[*Translation*]

Mr. Patrick Hupé: You're referring to ventilators that are currently completely free.

However, academically, there is currently a trend that intellectual property is increasingly being freed up. I'm no expert, but I think McGill University's Montreal Neurological Institute and Hospital has moved in that direction. We may see this elsewhere in Canada.

[*English*]

Mr. Lloyd Longfield: Terrific. We have seen that in Germany, too, at Fraunhofer, with its institutes sharing information. Thank you very much.

Mr. Nagpal, the 62 patents that you mentioned always get my attention. I love ideas being patented in Canada, but then there is a time and a place where you have to operate openly.

Anonymizing and aggregating data is another thing we talked about, Mr. Nagpal. You also talked about location-based data. Are you able to still use the data for a limited amount of time? Could we use the data, and have protections on that data, so that the Government of Canada could aggregate and anonymize it, or does it just fade away once it's been used one time?

● (1345)

Mr. Paramvir Nagpal: We are an innovative technology company, and that's why we pride ourselves on having 62 patents in six years, from the company's formation.

Back to your question, any authentication and credentials can be done to control the data. First, the data is stored on your personal device. If you want to share that information with your local government authorities, you can do that by giving them a password that disappears automatically within seven to 14 days, depending on how the system is configured. At the end of the day, we want to give the control to Canadians so they can make their own choices.

Mr. Lloyd Longfield: That's great. Thank you.

The Chair: Thank you, Mr. Longfield.

Mr. Lloyd Longfield: That's too bad. I knew I'd run out of time. Thanks so much.

[*Translation*]

The Chair: It's your turn now, Mr. Desilets. You have six minutes.

Mr. Luc Desilets: Thank you, Mr. Chair.

My first question is for Mr. Nagpal.

Mr. Nagpal, what percentage of the population would be able to access this application, including of course those who don't have a cell phone?

[*English*]

Mr. Paramvir Nagpal: First of all, technically the entire population can have access to this technology. One of the main cases is that you need to have a smart phone to enable the use of this technology. Theoretically, you can deploy this using Google Play store or App Store, and you can give everybody the capability to use this technology.

That said, if a person doesn't have a smart phone, they can also use certain features of this technology by going through a website, where they can see how the spread is happening in their own locality. If they're seeing some symptoms, they can easily go to that website, enter that information, and then do contact tracing. There are various ways we can securely provide that access to Canadians.

[*Translation*]

Mr. Luc Desilets: Could you be more specific please, Mr. Nagpal?

I get the impression that not the entire population has a cell phone and would be able to install this app.

Honestly, I don't know what percentage of the population could install this app. Are we talking 70%, 80%?

[*English*]

Mr. Paramvir Nagpal: The percentage would depend on how we want to deploy the technology. If 70% of people have a smart phone, they can easily install the smart phone application, and the rest can go on a website and access similar features on a web browser. The compatibility depends on how we are deploying the technology. You can deploy it on a smart phone, a website, or a web browser.

Of course, there will be some situations where we won't be able to hit the prospects, where they're not able to access the Internet or a laptop or a computer. We will not be able to cover those kinds of populations, but the majority of the population will be able to do that using this technology. This is exactly how countries like Singapore or some European member states have done this very successfully.

We have some customers in Taiwan, and they were saying to us that they didn't face that type of challenge as it was faced by the rest of the world, and it's because of how countries are using specific technologies for the well-being of their citizens.

[*Translation*]

Mr. Luc Desilets: Okay, good.

What I fear is that this app won't be available to the part of the population that is underprivileged and who, perhaps at the same time, is simply more at risk.

Thank you for your answer, Mr. Nagpal.

I have a question for Mr. Possamai.

After more than three months of the COVID-19 pandemic, do you feel that the current measures are adequate and sufficient?

● (1350)

[*English*]

Mr. Mario Possamai: I presume you're asking about the personal protective measures for health care workers. Is that correct?

[*Translation*]

Mr. Luc Desilets: Yes.

[*English*]

Mr. Mario Possamai: They're not, and I believe the data showing that one in five of the COVID-19 cases in Canada involves health care workers demonstrates that point. I think we urgently need to take a precautionary approach and protect our health care workers across the country to the highest level using airborne precautions.

[*Translation*]

Mr. Luc Desilets: Right. I understand very well.

Should there be a potential second wave, is there enough time to turn things around to better protect these people and hope for lower infection rates?

[*English*]

Mr. Mario Possamai: We have enough time if we act urgently.

One of the really disappointing things thus far from the federal government and PHAC is that we have not acted urgently to ensure we had enough PPE. For example, in late December, Alberta bought a huge quantity of N95 respirators. PHAC and Ottawa sat on their hands. Federally, we didn't begin to buy in large scale until March, and by that time, as you have heard, it was like the wild west in trying to buy N95s. We lost that opportunity. We have to move urgently. We have to create a domestic supply and we also have to look at alternatives, because N95s are not the only way to protect health care workers. There are P100s and other types of equipment that should be looked at on an urgent basis so that we have enough equipment.

For example, we were talking about technology. There have been some efforts to begin creating new types of equipment, and we have to move quickly.

Thank you.

[*Translation*]

The Chair: Thank you, Mr. Desilets.

Mr. Luc Desilets: Thank you very much.

[*English*]

The Chair: We go now to Mr. Davies for six minutes, please.

Mr. Don Davies: Thank you, Mr. Chair.

Mr. Nagpal, you mentioned that Singapore was one of the earliest adopters of contact tracing and you commented on the European Union being in the process of developing a model for contact tracing. We have had many experts tell this committee that testing and contact tracing are vital parts of getting a good grip on COVID-19. Where is Canada today in our implementation of contact tracing?

Mr. Paramvir Nagpal: I believe Canada hasn't been the frontrunner in adopting contact tracing. In the past week we had an announcement from the PMO that BlackBerry and Shopify would be collaborating to build a contact tracing app that would be available for Canadians to download anonymously and voluntarily. We haven't used the technology the way we should have.

Other countries have adopted it very quickly at very early stages. Right now we don't have the available app. We don't have any available data to see how it can be used. If you can't analyze it, you can't improve it. Let's say somebody has COVID and he or she goes to the hospital. How can you find with 100% accuracy where that person went in the last week or the last 14 days? It's very difficult. I believe we are doing some good through the announcements that we will be launching it, but we haven't done that at this time.

Mr. Don Davies: Experts estimate that voluntary contact tracing apps usually need approximately 60% participation among the public to be effective. In your view, is that level of voluntary uptake realistic, or should we be looking at mandatory use of contact tracing? What's your advice to the committee on that aspect?

● (1355)

Mr. Paramvir Nagpal: First of all, I think it's true that it needs to have 60% uptake. I don't feel we would get a 60% uptake on a contact tracing app in Canada. I don't believe we should make it mandatory. We are not a country that would take away that right from its citizens. I feel we should complement that with other location-based technology or another traditional method. When you combine the new technology with the traditional methods and also use some other kind of location-based applications, you are able to get the result you are looking for, and I feel that's the unifying mixture we need to look for to get the maximum result out of such technology.

Mr. Don Davies: Thank you.

Mr. Possamai, on January 31 you wrote to the federal health minister, Patty Hajdu, urging her to adopt precautionary protections for health care workers. In that letter you wrote, "I am profoundly disappointed that the Public Health Agency of Canada is risking health worker safety by recommending lower protections against the novel coronavirus." You also wrote that failing to act with tougher policies "would be to do a grave injustice to the victims of SARS and their families. Half of SARS victims in Ontario were health workers."

What was her response to your concerns?

Mr. Mario Possamai: She never replied to my letter.

Mr. Don Davies: Thank you.

Mr. Possamai, staying with you, we know that the final report of the independent SARS Commission in 2006 recommended very clear prescriptions for how to deal with a future pandemic. One of them, as you've pointed out several times, is that in any future infectious disease crisis, the precautionary principle should guide the development, implementation and monitoring of procedures, guidelines, processes and systems.

We've already pointed out that when it came to masks, droplet versus airborne transmission, asymptomatic transmission, community transmission, travel restrictions, border closures and emergency stockpiles, I think it's a fair comment to say that in all of those areas, if we did anything, it was that we ignored the precautionary principle and instead waited until there was actual evidence of something before we acted.

Would that be a fair characterization of Canada's response from January to date?

Mr. Mario Possamai: It is.

We had opportunities over and over, especially in the beginning and late December, when we had the first inkling that something very serious was happening in Wuhan. We had the opportunity to act boldly and quickly to protect our health care workers and, by extension, to protect the country, because protecting health care workers goes hand in hand with pandemic containment. The countries that have low levels of health care worker infections also have the best record of containing the pandemic.

Mr. Don Davies: Can you help us understand why that's the case? We had an unprecedented focus after SARS. As you mentioned, we had the Archie Campbell commission, and I think we had one at the federal level as well. We have very clear prescriptions about what to do, yet in the last 14 years, from 2006 to 2020, we have not only fallen down in that period, but also, from the beginning of COVID-19, we have failed to implement the very prescriptions in the independent SARS Commission report.

Can you give us your view on why that is? How could that happen?

Mr. Mario Possamai: I'll tell you personally that I'm gutted that it has happened, that things have gone the way they have here. This has gone far worse than my worst nightmare, and one of the reasons is that PHAC does not understand the role of unions and workers in worker safety. In any workplace, the responsibility for worker safety is a joint one between workers and their employer, which means, especially in the health care sectors, that nurses, doctors and other health care workers have a direct role in ensuring the safety of the workplace.

In the interactions that I know of and that I have heard of between PHAC and the unions, there's not been a positive dialogue, a collaborative dialogue, between workers, unions and PHAC. Instead, it's done cursory consultations with workers and unions, just ticking the box. In fact, there should be an ongoing dialogue, because front-line workers know first-hand what the risks are and how things are evolving. They can make real-time recommendations on how to ensure that everyone is protected. By "everyone", I mean workers, patients, visitors and the rest of us, because, as I said earlier, pandemic containment and worker safety go hand in hand.

● (1400)

The Chair: Thank you, Mr. Davies.

We'll go now to the second round. We'll start our second round with Ms. Jansen.

Ms. Jansen, please go ahead for five minutes.

Mrs. Tamara Jansen: Thank you very much. I would like to ask my first questions of Mr. Possamai.

I really appreciated your explanation of the lack of urgency. I can tell you that having been on this committee from the very beginning, I felt that very same lack of urgency coming from PHAC and from the government on a number of these things.

We had very serious concerns about the messaging from Dr. Tam regarding the danger that mask use would pose to Canadians and her insistence on ignoring the precautionary principle. This messaging, obviously, was subsequently repeated by Minister Hajdu at many of the COVID-19 briefings, and now, since then, there is new science that made them change their recommendation. Unfortunately, this meant that we lost a very important window of opportunity to get Canadians on board and comfortable with mask use.

From the various presentations we've had at this committee, it appears that Canadians were possibly being told not to wear a mask at the beginning because PHAC knew our national stockpile had not been maintained and there were not enough masks in Canada to protect even just our health care workers.

Would you say that the politicization at the highest level of PHAC has affected the decisions being made, to the detriment of Canadians?

Mr. Mario Possamai: I think PHAC has been slow to the game, and public masking is a great example. Early on I wrote a letter to Dr. Tam saying that concerns about self-contamination are warranted, but if that's the case, you should have an urgent, wide public health campaign—as they do in Singapore, as they do in Hong Kong, as they do in Taiwan—on how to wear a mask. That still hasn't happened. As I walk in Toronto, I see well-meaning Canadians wearing homemade masks, but they're wearing them with their nose exposed. I see Canadians with beards wearing masks, when we all know that beards prevent the safe wearing of masks.

There is a real failure there to really act urgently to protect Canadians and also to make sure they get the best information.

Mrs. Tamara Jansen: Many constituents in my riding wanted to use masks in the beginning, but it was suggested that wearing a mask in public would instill fear or a racist backlash. Since Dr. Tam would have known that masks were an added level of protection right from the start, why do you think she didn't insist they be used? Do you think she was pressured by the WHO or other political stakeholders?

Mr. Mario Possamai: That's a great question. It's one that I've wondered about. What I've seen is that PHAC's advice has been in lockstep with the WHO right from the word go. There has not been any critical thinking, any critical evaluation, on whether that's the right advice.

I'll give you another example, if I may. The WHO China mission, on February 28 this year, said that China was able to eliminate health care worker infections, but they didn't explain how. You have to go right to the back, to the fine print, to see that they did it because they ordered everyone to wear N95s. Now, that's a grey standard for the WHO, and I hope it's one the committee exposes if you get the right WHO witness. I am disappointed that PHAC didn't have the critical mindset to look at that and say, "Why was China able to protect its health care workers?"

Mrs. Tamara Jansen: I know when we had PHAC come by, we realized that they weren't even rotating our stockpile. How do we hold these people at PHAC responsible? Should there be an independent body doing a performance review, as you mentioned, on a yearly basis or something?

Mr. Mario Possamai: You know, when Justice Campbell gave the advice on setting up PHAC and Dr. Tam's office, he felt, and I agreed with him, that we had it covered, because it gave that office the independent ability to speak out on health risks. We thought that if there was a shortage of masks, they would speak out and would do so in a timely manner. It hasn't happened.

Parliament, in my view, should really require certification every year, in depth, on whether we're ready for such an existential risk.

● (1405)

Mrs. Tamara Jansen: Thank you very much.

I have a quick question for Medtronic. I read in your May company report that you had a 26% decrease in your first-quarter revenue due to COVID-19. Apparently the cardiac and vascular group saw the steepest decline, at 34%. We know that many procedures are being deferred right now in order to ensure that our health care system is not overwhelmed. Your falling revenue number suggests quite a high rate. What do you think that will cost in Canadian health outcomes?

We do different things. First, it's all part of our mission. Medtronic Canada's mission was written 60 years ago by its founder, Earl E. Bakken, and it's all about that. It's essentially about making sure that we can relieve pain, prolong life and restore health to patients.

We are obviously very close to patients, and we see in a very real way the effect of our technologies on their health. This inspires our employees and gives meaning to what we do in practice. Often, employees tell us that when they go through a bit of a difficult or discouraging time, they remember this mission and the impact it has on patients. Sometimes even patients who benefit from our technology come and tell us firsthand about the benefits of our technology. That obviously has a big impact on all of us at Medtronic Canada.

● (1420)

[English]

Mr. Mike Kelloway: Thank you so much.

I have one last question, Mr. Chair. Then I will give up my time.

Dr. Possamai, as a former senior adviser on the SARS investigation commission, you've talked about this, but if you had to look at the now and in the future, which is not that far if we look at a potential second wave, I'm wondering what you would recommend now for front-line health care workers, of which I have many in my family, in terms of a number of ways to maintain their safety during the pandemic.

Mr. Mario Possamai: First of all, I think we need to move to the precautionary principle in protecting them. We need to go to airborne precautions. As we now move, as the government has said, to domestic production of N95s, we should really ramp that up to make sure we have enough supplies to do that.

We need to urgently try to find alternatives as well, because N95s are not the end-all and be-all. There are other ways. Unfortunately, PHAC doesn't have the internal worker safety expertise to really do that. I think it's important to reach out to health safety experts and industry to advise PHAC on doing that.

Mr. Mike Kelloway: Thank you so much.

Thank you, Chair.

The Chair: Thank you, Mr. Kelloway. I appreciate your help.

We'll go now to Mr. Desilets.

You have two and a half minutes, strictly, but if you could make it less, that would be very helpful.

[Translation]

Mr. Luc Desilets: Okay. Thank you, Mr. Chair.

My question is again for Mr. Possamai.

You mentioned earlier that it was important for the federal government to produce an annual report so that we don't end up in a situation similar to the one we've experienced and are still experiencing.

Can you tell me a little bit more specifically what you'd like to see in this report? Would it deal with stock levels, contingency plans? What would it deal with specifically?

[English]

Mr. Mario Possamai: That's a great question.

We need to know if we have enough supplies, enough N95 respirators, and we need to know where they are located. More importantly, we need to know if we have the right worker safety culture across the country in different settings, because the N95 is only part of what makes a workplace safe. There is a hierarchy of control. We need to engineer control.

It's really a holistic approach that leads to safety, and it goes beyond worker safety. It's also having the industrial support in place if we need to ramp up supplies in certain areas.

[Translation]

Mr. Luc Desilets: Thank you.

Mr. Hupé, do you think Quebec currently has all the respirators it needs?

Mr. Patrick Hupé: That's a good question, but it's very difficult to answer. The Department of Health may have that information, but we, as suppliers, have difficulty collecting it. We aren't the only suppliers. There are a number of others, so it would be difficult for us to give a definitive and comprehensive opinion.

Mr. Luc Desilets: Great.

Should there be a second wave that is larger than the one we've just had, could the problem with respirators be even bigger still? If not, will there be time over the next two months to meet the potentially greater needs?

● (1425)

Mr. Patrick Hupé: Concrete steps have certainly been taken. I'm not clairvoyant, but for our part, we've quintupled the production of the ventilators I mentioned, which are quite sophisticated. That will certainly be helpful.

We've also made our intellectual property available so that groups such as Ventilators for Canadians, with Baylis, which is headquartered in Montreal, as you know, can also produce another type of ventilator. Certainly, the quantity available will be greater than it was on March 12 or 13.

Mr. Luc Desilets: Thank you very much, gentlemen.

[English]

The Chair: Thank you, Monsieur Desilets.

We will go now to Mr. Davies.

You also have two and a half minutes. If you can make it shorter, that would be most helpful. Thank you.

Mr. Don Davies: Thanks.

Mr. Possamai, some of the things we're talking about are water under the bridge, but we're still currently in a health crisis and we have decisions to make now. I want to put a current situation to you and get your advice.

Recently, Dr. Theresa Tam advised Canadians to avoid the three Cs: closed spaces with poor ventilation, crowded places with large numbers of people, and close contact where you can't maintain optimal physical distancing from others. However, on July 1 we heard that Air Canada and WestJet are going to full cabins, where obviously you can't have physical distancing. Transport Canada is thus far refusing to enforce physical distancing rules on the airlines, as is the case with many of the businesses.

What would be your advice to the government on that? Should we be mandating physical distancing rules on airlines as a precautionary principle?

Mr. Mario Possamai: I think we should. I think it's very risky to do otherwise. I think the physical distancing approach that we take anywhere should also be occurring on planes. I don't see why they should be exempt.

Mr. Don Davies: Thanks.

I also have been on this committee for a number of years and from the beginning of COVID-19, and I remember that back in January, February and March, two things were going on. One was that we clearly had a shortage of personal protective equipment in this country. You've spoken of the expired masks, the destruction of two million N95 masks and the clear shortage. At the same time, our chief public health officer, Dr. Tam, was advising Canadians that masks would be harmful, never mind not recommending them. As well, clearly a number of health care workers were not getting the PPE they needed.

Do you think there was a connection between those two things? Do you think the reason the government was not recommending masks to the Canadian public in the early stages of this pandemic and was not providing them to front-line health care workers was because we had a national shortage?

The Chair: Give a 10-second response, please, or as quick a response as you can make it.

Mr. Mario Possamai: Sorry, I can't answer that quickly.

The Chair: Thank you, Mr. Davies.

Mrs. Tamara Jansen: I have a point of order.

Can we not give him a few more minutes? I'm sure the cleaning people can hold.

Mr. Don Davies: How about 30 seconds to answer?

Mrs. Tamara Jansen: I think that was a go-ahead, but you're—

The Chair: Sorry. Use 30 seconds if you can do it.

Mr. Mario Possamai: Thank you.

I think shortages were probably part of the thinking, and that's the wrong kind of thinking.

For example, if you run out of a certain antibiotic, you don't say that the disease has gone away. You might find an alternative type of antibiotic so that you can keep treating that disease. The same thing happened here in Ontario. The ONA brought a court case in which a medical expert said that yes, they went away from a precautionary approach because of shortages.

That is just unconscionable. If you have a shortage, you find a substitute or you find another way, but you keep protecting workers. You don't lie to people about what the science says.

● (1430)

The Chair: Thank you.

That winds up round two. I thank everybody for their participation and their time, and certainly the witnesses for their time and expertise.

I apologize to the crew who have to turn this room around. We're a little over our time, but thank you for all your hard work, everybody.

With that, we are adjourned.

3

Transcript of the Long Term Care Covid-19 Commission interview of Mario Possamai on December 16, 2020. Mario explains how the province could've prevented a lot of the transmission that occurred in long term care homes had they used airborne PPE and that the province was still failing to promote the importance of elastomeric respirators or put them into any meaningful use. Mario also explains how alarming it was that the government had failed to act with any sense of urgency to protect workers and that the evidence showed it was negligent not to follow the Precautionary Principle and ensure widespread use of airborne PPE from the beginning.

Source: https://wayback.archive-it.org/17275/20210810150744/http://www.ltccommission-commissionsld.ca/transcripts/pdf/Mario%20Possamai_Transcript_December_16_2020.pdf

Long Term Care Covid-19 Commission Mtg.

Former Senior Advisor to the SARS
Commission/Expert for ONA
on Wednesday, December 16, 2020

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BEFORE:

The Honourable Frank N. Marrocco, Lead Commissioner
Angela Coke, Commissioner
Dr. Jack Kitts, Commissioner

PRESENTERS:

ONTARIO NURSES' ASSOCIATION:
Mario Possamai, Former Senior Advisor to the SARS Commission/Expert for Ontario Nurses' Association
Sharan Basran, Senior Executive, Legal Counsel, Ontario Nurses' Association

PARTICIPANTS:

Alison Drummond, Assistant Deputy Minister, Long-Term Care Commission Secretariat
Ida Bianchi, Counsel, Long-Term Care Commission Secretariat
Kate McGrann, Counsel, Long-Term Care Commission Secretariat
John Callaghan, Counsel, Long-Term Care Commission Secretariat
Lynn Mahoney, Counsel, Long-Term Care Commission

for the opportunity to appear before you. Your work is vital and important, and I don't envy the tight timeline that you are facing and also the fact that you are doing this in the middle of a pandemic, not after the fact, as what occurred with the SARS Commission.

So let me introduce myself. I was a Senior Advisor to Justice Archie Campbell and the SARS Commission, and it was it was an honour and the highlight of my career to assist Justice Campbell.

My areas of responsibility were pandemic preparedness, and in that regard, I liaised with officials in the U.S. in that regard.

My major responsibility was in the area of occupational health and safety, and in that regard I assisted Justice Campbell in investigating, for example, why things went much better in Vancouver than they did in Toronto. I investigated the issues with respect to airborne transmission, occupational health and safety, the dispute, or the debate, rather, during SARS of whether health care workers should be wearing surgical masks or N-95s, which has some strong echos in COVID-19.

And earlier this year, I was retained by the Canadian Federation of Nurses Unions to write a report looking into Canada's performance in COVID-19 during the first wave, and it was published in October. And I believe that you have received a copy of it. It was called A Time of Fear. If you haven't, we can certainly make sure that you get a copy.

COMMISSIONER FRANK MARROCCO (CHAIR): I think we do have a copy of it, but if that turns out to be wrong, then we'll take you up on that, for sure.

MARIO POSSAMAI: All right.

And I just want to note that the findings and recommendations were endorsed by a number of international experts, including Dr. Donald Milton and Dr. Lidia Morawska, who were the co-authors of the letter to the WHO in June of this year asking them to acknowledge the airborne transmission route, also Dr. Raymond Tellier in Montreal and Dr. Yuguo Li in Hong Kong whose research led to the first evidence that SARS could be transmitted through the air.

I have been -- as you know, I have been retained as an expert by ONA to author a report on whether the lessons of SARS were applied in the long-term care sector during COVID-19, especially with regards to pandemic preparedness and leadership, the failure to follow the precautionary approach against a new pathogen and the failure to learn from the clinical judgment of Registered Nurses, many of whom had experience during SARS.

I want to begin with a quote from Justice Campbell in the final report, and I have re-read this many times during COVID-19 but I re-read it recently, and he talks about the public health system being broken and needing to be fixed and he identified a problem with regards to the public health system being unprepared, fragmented, poorly led and uncoordinated. And much of what he said then to me has echoed in COVID-19.

And when I began writing A Time of Fear, his insights were really strong in my mind. And so you know, it is my view that Canada has witnessed in COVID-19 a systemic preventable failure to learn from the SARS outbreak, and it has been a failure to adequately prepare and to respond in a manner commensurate with the threat that we faced.

I want to begin by trying to situate

our record here in Canada of how well we have done, and I think for many of us, you know, we look at what has happened in America, and in comparison we have done extremely well.

But I don't think that is the best example. That is really a low bar. And I think, you know, what has happened in America is incredibly tragic, but I think a better way or a better comparison would be with China, Hong Kong and Taiwan who I call our SARS peers. And during SARS, you know, most of the outbreaks occurred in those four countries, and Canada was the only nation outside of Asia to be affected by SARS.

And you know, when we look back on SARS, it certainly didn't have the magnitude of the damage that COVID-19 has, but it was a dress rehearsal. It was a chance for us to learn and prepare.

And 17 years after SARS, the evidence suggests that, you know, China, Hong Kong and Taiwan learned from SARS. Canada and Ontario did not.

You know, the number of health care workers who have been infected is really staggering. You know, in early July, when we can say was the end of the first wave, we had more than 6,000 health care workers infected with COVID-19 in Ontario. By early December, that had grown to more than 10,000.

And the numbers are troubling. They are troubling because they are so huge and they represent infections among health care workers or frontline people, the people that we put in the line of danger to protect us.

But also it shows that between July and December we did not learn and we did not implement enough policies to protect them.

You know, under the best scenario, if we had learned from the first phase, if we had learned from SARS, then I believe the total number in early December would be much closer to what it was at the end of the first wave.

Right now, there are more than 3,700 staff in long-term care with infections, and it is useful to compare our numbers with China. And it is important also to consider the fact that China was the first country to really experience COVID-19 and that in late January China did something quite extraordinary. They moved to airborne precautions for all of their health care workers, and that was done because there had been a very worrying spike in health care worker infections in China up to that point, and afterwards, you know, health care infections dropped, dropped significantly.

Hong Kong also went to airborne precautions, and the number of health care workers is quite minimal compared to what we have here in Canada.

When you look at the overall numbers as well, it is quite shocking. You know, we have here in Ontario more cases of COVID-19 than China, Hong Kong and Taiwan combined.

And then when you look at the numbers in long-term care, very significant in the fact that in long-term care there is such a huge number.

One of the important things that China, Hong Kong and Taiwan did is that when they were learning from SARS and they were preparing their pandemic plans, they prepared for the unknown, for the unseen, for something like SARS.

Canada and Ontario, unfortunately, prepared for the next pandemic as if it would be a flu pandemic, and we treated COVID-19 as if it was influenza and we forgot a really important lesson from Justice Campbell. You know, he said, and I am the things that occurs to me is why do you think they did that?

MARIO POSSAMAI: Well, I think that is a difficult question. I have been thinking about it a long time. I have been thinking about it for years, actually, as I watched, you know, the pandemic planning focussed on influenza.

But I think also it goes back in part to the fact that there is a strong element in our public health and medical community that seems to be adverse to taking a precautionary approach, and you know, I think that unless you think in a precautionary way, it is hard to think outside of your comfort zone, if you will.

You know, when you look at one of the first documents that Public Health Ontario published on the transmission dynamics of COVID-19, this was in early March, and it really downplayed the possibility of airborne transmission, and as evidence of that, one of the footnotes to that conclusion was a textbook from 2016 which was before COVID-19 was discovered. And we can send you that document, if you would like.

And you know, another bit of evidence that was used in that document to demonstrate that airborne transmission was not a concern was a reference to a document published by the European CDC.

Now, the reference, the part that is being referenced has two parts. The first part said there is no evidence of airborne transmission. The second part says that nevertheless we are going to recommend airborne precautions. The second part was not stated in the Public Health Ontario document.

The Public Health Ontario document talks about the experience in China, and it was published shortly after the WHO's mission to China, and the Public Health document says, you know, the WHO China mission found that there was no evidence of airborne transmission, which is true. What it failed to say is that China, in fact, had gone to airborne precautions even though the evidence was unclear.

So I think there is a problem in our public health and medical community because there is a strong reluctance among some members to really take a precautionary approach.

COMMISSIONER FRANK MARROCCO (CHAIR): It is interesting that you say that because, of course, Justice Campbell, as you would well know, articulated a precautionary approach, recommended the precautionary principle. His report was accepted, praised by everybody, but no meaningful takeup of the precautionary principle.

I don't want to keep asking these questions, but I mean, did you form a conclusion about why this reluctance? I will eventually stop asking "why" questions, but did you get a sense of why there was this reluctance over the precautionary principle?

MARIO POSSAMAI: Well, you know, again, this is something that I have thought about a lot. I haven't landed on the right answer, but I think there are a lot of aspects to it.

One is the fact that the decision-makers in public health are in a very narrow range of disciplines, so epidemiology and infectious disease control expertise, and these are important areas of expertise, very valuable and crucial to public health and public health prevention.

But what is missing there is a lot of the other ranges of expertise. You know, we don't have occupational hygienists who are the engineers, who are the specialists in occupational safety. We don't have the bio-aerosol people who are the scientists and physicists who are doing this cutting edge science research into aerosols and how they behave.

And you know, when you listen to the language of public health and many of our leading experts, they use terms like "large droplet" and "contact transmission". These, when you talk to the cutting edge researchers in bio-aerosol, these are really outdated terms. They are based on research from Harvard from the 1930s, and science has really evolved from that.

So there is really a clash of new science, cutting edge science, with the foundational elements of it.

And the other point I would like to make is that throughout COVID-19, as occurred during SARS, public health and infectious disease experts were looking for certainty. They wanted evidence, complete certain evidence of airborne transmission.

Justice Campbell and worker safety experts and bio-aerosol people, they were not saying that the evidence and the studies are conclusive proof of airborne, but what they were saying is that there is sufficient evidence, sufficient foundation to take a precautionary approach.

We saw this most glaringly after the letter to the WHO by Donald Milton and the others in June where what they said was we believe there is sufficient evidence to take a precautionary approach, to follow the precautionary principle with airborne transmission.

There was a letter sent to the same publication about a week later by a large group of infectious diseases experts countering that proposal, and they focussed again on certainty. They really disregarded the precautionary approach. And I note that about half the signatories to that letter were Canadians.

I hope that begins to answer the question.

COMMISSIONER FRANK MARROCCO (CHAIR):

Yes, I appreciate that and I appreciate that I am asking you to conclude something that is really a deduction from what you have investigated and I appreciate the answer.

MARIO POSSAMAI: Thank you.

I go into this in more detail in A Time of Fear, and if there are any documents, original documents cited there that you would like, please ask.

COMMISSIONER FRANK MARROCCO (CHAIR): All right.

MARIO POSSAMAI: I want to go back to Dr. Lum in Hong Kong and the Hong Kong experience. Basically, they moved with great urgency to protect their long-term care residents, again, based on the SARS experience.

And when you compare with the way that the Ontario Government has acted in terms of responding to the long-term care needs, there was a lack of urgency. You know, Dr. Lum talks about the importance of preventing transmission from hospitals to long-term care facilities.

If you look at this table, this didn't happen in Ontario until April 15th, so there was a real delay there. You know, on March 22nd the directive said that, Directive #3 said, you know, "wherever possible" homes should restrict health care workers to one facility. You know, this wasn't implemented until late April.

So there was a real lack of urgency to

take action, where Hong Kong, from all the evidence, acted in a very urgent manner.

Moving on to preparedness, Justice Campbell was quite eloquent, as he was throughout the report, but he really emphasized the importance of being ready, of being prepared, and being prepared not just with equipment, N-95s and what have you, but also resources of people. He was very aware that we had to be ready to have surge capacity for human resources that would be in great demand during a pandemic.

In response to the SARS Commission recommendations, Ontario established a stockpile of 55 million N-95s, and then three years ago the Auditor General revealed that 80 percent of that stockpile had expired and was being destroyed. And what is really striking is that most of those supplies had not been put into the health care system before they expired so that they could be used.

And the last part that I think is stunning to this day is that evidently the budget to store those supplies were only for storage and not the management of them.

Now, I understand that the Auditor

General is examining this issue and --

COMMISSIONER FRANK MARROCCO (CHAIR):
That seems to be like an odd distinction. Managing it would involve presumably using it before it is useless.

MARIO POSSAMAI: Absolutely.

COMMISSIONER FRANK MARROCCO (CHAIR):
Well, I won't -- anyway, go ahead.

MARIO POSSAMAI: Okay. So you know, setting aside the issue of what happened and how it happened and how things could have gone so badly, which I expect that you are investigating, as is the Auditor General, I want to focus on a different aspect of it and that is that no one warned us that this was happening.

You know, when 55 million respirators were taken out of the system, it severely hampered our ability to protect health care workers at an airborne level, and this was a question that troubled Justice Campbell. You know, he wondered, how can we be sure that these kinds of major health risks are brought to the public, to the attention of the public and of government if governments neglect to take the proper actions.

And so in his view, what he felt was

and the Legislative Assembly whenever he or she deems necessary.

And I believe one of the troubling aspects of the lead-up to COVID-19 is that our Chief Medical Officer of Health did not warn us and did not warn legislatures that we weren't ready for a pandemic.

You know, in 2018 the Chief Medical Officer of Health issued a report on health inequalities, a very important issue, but he did not use that opportunity of the annual report to address the issue of pandemic preparedness.

Now, under the Act he is able to issue an annual report and also reports on an ad hoc basis, but one year later the Chief Medical Officer of Health's report dealt with, you know, another important health issue for the community, but again, he did not use that opportunity to address the issue of pandemic preparedness.

And you know, as I indicated, he did not issue an ad hoc report, as he could have under the Act, to warn about Ontario's lack of pandemic preparedness.

And in fact, you know, when I see statements like the one quoted below, it makes me wonder whether Dr. Williams was aware of how badly we were unprepared for a pandemic. You know, when he said "We're light years ahead of where we were in 2003", I would take issue with that statement, frankly.

COMMISSIONER FRANK MARROCCO (CHAIR):
When did it come to light or when did the Auditor General point out, in what year, that 80 percent of the 55 million N-95 masks had expired?

MARIO POSSAMAI: That was December of 2017.

COMMISSIONER FRANK MARROCCO (CHAIR):
So that would go directly, at least in your view, and correct me if I'm wrong, that would go directly to your preparedness to respond to a seriously infectious disease, even if you don't think in terms of a pandemic.

MARIO POSSAMAI: Absolutely.

COMMISSIONER FRANK MARROCCO (CHAIR):
So is it your view that he has some responsibility to know whether that supply has been replaced or not?

MARIO POSSAMAI: Absolutely. You know, I know that, you know, there is some controversy about using military analogies in dealing with a pandemic, but you know, this is like -- you know, the Chief Medical Officer of Health is akin to a general leading troops into battle. A general would have to know how many troops he had, he or she had, how many tanks, how much artillery, and by going into a pandemic without knowing what he had in store, what was available, I think is troubling, to say the least.

But as someone who, you know, is in charge of pandemic preparedness and pandemic response, I think it was incumbent on Dr. Williams to know what was happening on the ground. Plus, the Auditor General's report was a public report. It was no secret the fact that --

COMMISSIONER FRANK MARROCCO (CHAIR): But some of these people, and I don't know about Dr. Williams, and maybe you can help me with that, but some of these people were around for SARS.

MARIO POSSAMAI: Yes, and Dr. Williams was around for SARS as well.

COMMISSIONER FRANK MARROCCO (CHAIR): Yes, and I think Dr. Yaffe?

MARIO POSSAMAI: Yes, Dr. Yaffe was

there, yes.

No, I am perplexed that none of them spoke out and warned us that we weren't ready.

You know, the 55 million respirators - and you know, Dr. Kitts would know better than I - you know, the burn rate in a large hospital with N-95s is quite significant, but 55 million respirators would have made a huge difference for us. It would have allowed us to protect our health care workers close to the level that the Chinese have done, and we can see that they were -- it was very, very effective.

COMMISSIONER FRANK MARROCCO (CHAIR): In the course of your investigation, did you come across the fact that we - I thought I saw this on the news, anyway - that we shipped personal protective equipment to China in February?

MARIO POSSAMAI: Yes, yes, yes. Yes, we did that --

COMMISSIONER FRANK MARROCCO (CHAIR): That wasn't Dr. Williams, to be clear. That was the federal government. That has not got anything to do with him.

MARIO POSSAMAI: Exactly, yes, yes. That's correct.

problems there well before COVID hit us, and I sent some N-95s to her and her staff at the hospital in Bologna.

But the fact is that this was public, and there was no effort, to my knowledge, by the Ontario Government to seize the supplies of N-95 respirators or to buy them or to take them into account. There was no urgency there.

And the Mississauga wholesaler that I mentioned before, he said that by the time government came to him asking to buy additional N-95s, the shelves were empty. It was too late.

So there was a real lack of urgency.

Another example of a lack of urgency is with respect to elastomeric masks. You have probably seen what they look like. They are masks with two filters on the outside. These are respirators that have re-useable filters, which is great because it means that you can cut down on the burn rate of N-95 respirators.

So at the beginning of our pandemic, in February or so, some health worker experts were saying let's get elastomerics. Let's use them. They are as effective as N-95s. And this will reduce the strain on the N-95 supply.

And to this date, the Government of Ontario has not acted to introduce elastomerics in any great quantity into the system. So there is a real lack of urgency there.

So I just want to focus a bit on the precautionary principle and the area of airborne transmission.

You know, the precautionary principle talks about, you know, acting with caution and erring on the side of safety in the face of a new pathogen, but it also extends to other areas as well. It also means erring on the side of safety with regards to a new pathogen. It is different. It acts in a different way.

And I have a quote later on in the presentation from Dr. Fauci from America and he said that we need to be humble, and I think in the face of a new pathogen, we need humility and I am not sure that we exhibited that quality.

I want to fast-forward to the issue of airborne transmission. In another echo of COVID-19, during SARS there was a real debate about whether SARS could be spread through the air, and at the time of SARS health care workers were saying let's err on the side of caution. There was controversy about that.

The evidence, the first evidence of airborne transmission did not come until after the outbreak, and in Justice Campbell's view, it was the fact that the evidence came out after the outbreak certainly validated those who were advocating a precautionary approach and that influenced his finding on the precautionary principle.

COVID-19 is different. Over the past 17 years there has been a lot of good research done on airborne transmission, which is difficult to pinpoint and difficult to research on. It is no wonder it has been called the elusive pathway.

But during COVID-19, there was a body of evidence built up before 2020 on airborne transmission, and then since the start of the pandemic, there has been growing evidence of airborne transmission and it has been disregarded.

And what health care workers and unions and experts on the health worker side were saying is, you know, we may not be certain that it spreads through the air, but gosh, let's err on the side of caution. Let's take the evidence, the growing evidence, as sufficient grounds to take a precautionary approach.

COMMISSIONER FRANK MARROCCO (CHAIR): And what would that entail? Like what would be the sort of bare minimum that you would see that you would do if you assume it is airborne?

MARIO POSSAMAI: Well, first of all, you would protect health care workers at the airborne level.

Secondly, you would also begin to look at ventilation and air quality and air purification and things of that nature.

So through much of COVID-19, the emphasis has been on contact, close contact, and on surface cleaning and hand-washing. Now, over time we have found that the need for surface cleaning and hand-washing may not be as critical as maybe it was, so that the transmission through fomites is not as significant as many of us feared.

But in focussing on those important issues, and I am not saying that we should not have, but in focussing on those important issues, we should also have focussed on airborne. We should also have focussed on ventilation, on separation, on things like public masking.

So you know, by not taking a

precautionary approach, not only did we not protect health care workers as we should have, but we also didn't begin to do things like really focus on ventilation in long-term care facilities, in schools, in workplaces, because all the policies were driven on the policy that COVID-19 would spread through fomites, that is, surface transmission or close contact.

COMMISSIONER FRANK MARROCCO (CHAIR): I think we are fine, so go ahead.

MARIO POSSAMAI: Okay.

COMMISSIONER FRANK MARROCCO (CHAIR): We'll speak up.

MARIO POSSAMAI: Okay.

COMMISSIONER FRANK MARROCCO (CHAIR): Don't worry.

MARIO POSSAMAI: Okay, I want to turn now to the decision in March of this year where we downgraded our precautions from the airborne precautionary level.

So the precautionary principle was embedded into the Health Protection and Promotion Act, as per the recommendation of Justice Campbell in his report.

And in the first period of COVID-19, we

were following a precautionary approach. The recommendation was that health care workers should wear N-95s, but then in early March, on March 10th, Ontario downgraded those protections to droplet and contact.

And you know, back to your point, Justice Marrocco, about why things are the way they are here in Ontario, there was a very influential public campaign to get Dr. Williams to downgrade those protections and to drop the precautionary approach.

A letter was leaked to the Toronto Star that made sort of the front page saying that N-95s and airborne precautions were not needed. You know, there was another -- there was some articles in The Globe and Mail saying the same thing. And both those articles said, you know, that there is sufficient that COVID-19 does not spread through the air and we don't need to have N-95s.

And have you know, the evidence I think is light and it is questionable, and you know, in hindsight, with the benefit of hindsight, the evidence just was not substantive enough to require the downgrading of precautions.

And if I may just add, it is that, you

know, one of the missing pieces of the Health Protection and Promotion Act was how easy it was to throw out the precautionary principle, and that is a huge move because it meant, you know, as I indicated earlier, that not only health care workers were not sufficiently protected but we didn't do the things that we should have with regards to ventilation and other things in schools and workplaces and long-term care facilities.

So in my view, and I would invite you to consider this, is that any decision by the Chief Medical Officer of Health to downgrade protections and to decide that the precautionary principle was not warranted should be the subject of some kind of oversight, hearings by the legislatures, for example, things of that nature, so that there is a sense of oversight for the importance of taking such a decision.

COMMISSIONER FRANK MARROCCO (CHAIR):

Do you think on the basis of your work that the decision in March to downgrade was driven by the fact that there was no -- by the shortages of personal protective equipment, which presumably somebody knew?

MARIO POSSAMAI: Yes, I think it was a

case of supply over science, and I think that that's a very -- that was a very dangerous precedent because, you know, it is one thing to say that we have a supply problem and let's deal with it. It is another thing to say that the science shows us that we don't have to worry about airborne transmission.

I think a far better approach would have been to say, you know, it is early. We don't know enough about this thing. Let's take a precautionary approach. We also have supply problems, and let's deal with them separately. Let's do our best to ensure that we can protect health care workers at a high level.

And you know, as I indicated, there was no urgency to do that on the supply side. It was late in coming.

COMMISSIONER FRANK MARROCCO (CHAIR):

But I have a little difficulty understanding that because if you don't have -- for example, let's just take the masks; for example, if you don't have enough of the appropriate quality of mask, you can't really deal with them separately because there won't be masks for people to wear.

MARIO POSSAMAI: Right. Right, so I

think we have to separate the science from the supply side.

So on the one hand, if that is the case, if you don't have supply shortages, you shouldn't say you don't need N-95s because the science tells us that we don't need it. If you do that, in my view, then you are bringing science into disrepute.

I think a far better approach is to take the one that the CDC did which is to say, you know, let's take a precautionary approach. We wish that we could take care of everyone with N-95s. We have to take measures to protect health care workers. That may be unconventional and unexpected. But let's try to get the supply of N-95s and other respirators up to speed quickly. And you know, we didn't do that.

I hope that answers your question.

COMMISSIONER FRANK MARROCCO (CHAIR):

No, it does. It does. To the extent that there is a concrete answer that you and I are aware of, no, it does respond to my question. We are both talking about the same thing.

MARIO POSSAMAI: Okay, thank you.

Commissioner Coke, did you have a

question?

COMMISSIONER ANGELA COKE: Actually, my question was that exact question, which you have answered. I understand what you are saying. Thank you.

MARIO POSSAMAI: Okay, thank you.

May I proceed?

COMMISSIONER FRANK MARROCCO (CHAIR): Yes, please.

MARIO POSSAMAI: I think we have probably covered this, but ONA went to Court to challenge the downgrading of protections, and Dr. McGeer was the affiant for the government, and Justice Morgan cited her, her affidavit, with regards to making his finding.

But again, you know, in her affidavit she talks about evolving evidence that respirators were not needed, and you know, I question her finding in that regard. I don't think that we had the evidence at the time to say that with any kind of certainty.

And you know, in his decision Justice Morgan talked about this duality, if you will, between science and supply, and he found in favour of ONA and of health care workers in saying - and this is my reading of his finding, or of his judgment, rather - that, you know, we should not mix science with supply shortages. We should keep those apart.

And then there is this troubling quote which is attributed to Michael Hurley, the union leader, and he said that -- and let me read it to you:

> "I heard Dr. Williams say that
> when we get the supply problem dealt
> with, we can return to the
> precautionary principle [...]"

And you know, I think that speaks to this troubling duality separating science -- that tries to blend, rather, and commingle science and supply. I think we need to keep those separate, and I think we need to really be open with the public about what we know and what we don't know and what we know for certain.

You know, the decision by Public Health Ontario to downgrade the precautions, the precautionary level, was really troubling for nurses. Nurses play a really important role in long-term care facilities. They are often in charge of the facility. They play a leadership role. They manage care.

And you know, nurses are steeped in the precautionary principle. Nurses probably have the most direct clinical experience with COVID-19 patients of any profession. And you know, they were aware from day one that the precautionary principle should have prevailed. You know, many of them lived through SARS. They follow science very closely. And their views, and we have a few slides with their comments, but they really show that for them, you know, they were concerned about airborne transmission and they were concerned that the precautions were being downplayed.

And you know, and put yourself in their position. So, you know, they are steeped in the precautionary principle. They lived through SARS. They follow the science. They follow the fact that month after month since January there was growing evidence of airborne transmission. And yet they were being told by their employers and by infection control people from hospitals that you don't need an N-95 respirator, that it doesn't spread through the air. And now, you know, months later the fears of these nurses were validated and were borne out. You know, it is now recognized even by PHAC that

COVID has an airborne transmission component to it.

And you know, that really is a troubling -- that raises troubling issues of trust by nurses and by frontline health care workers into whether they can really rely on the advice of public health agencies.

You know, in the bottom quote on this page, you know, a nurse says:

> "I felt like a lamb being led to slaughter. I have an infection control background, and everything I was taught was thrown out the window."

You know, they learned nothing from SARS.

And what is also troubling to me is the fact that our Minister of Health does not appear to understand the precautionary principle. You know, she spoke in the house on November 30th, and you know, what she said was, and I will quote. She says that not -- she says that airborne transmission:

> "[...] is still very controversial. Not all of the experts agree on that. Most of the

experts right now believe that it is generated through water droplets [...]"

I think that was probably a mistake on her part.

"The science is still being developed in that area and we are still awaiting some of the results."

So, you know, when she says that we are making decisions based on clinical evidence and based on science, she really misunderstands the current situation or the situation that she described.

When the evidence is uncertain, when the evidence is mixed, when there is conflict of this nature, that is precisely the time we need to take a precautionary approach.

And I also want to add that, you know, in early November PHAC acknowledged the possibility of airborne transmission, but to date, until now Ontario has not updated its PPE guidelines to reflect that.

So put yourself in the position of health care workers. You know, they have read that PHAC has acknowledged that there is airborne like the one quote in the first quote there were telling their employers and were telling infection control people from hospitals that, you know, the science is mixed. We don't know whether it is droplet only or airborne. But they were told no, you are wrong. The science shows that you don't have to worry about airborne and you don't need an N-95.

And there are many, many cases where, as you know, health care workers had the ability to use their own clinical judgment in a particular situation to ask for an N-95, and there were so many instances where, you know, they were told by the employer or perhaps the IPAC lead that, yes, of course you can have an N-95, but you know that it is not needed and you know that you are wasting a valuable resource.

So I think, you know, one of the findings of the SARS Commission, one of Justice Campbell's findings was that it is important to have, you know, all the best minds, all the best experts around the table making the decision.

And there is a section in my report A Time of Fear where I quote a very senior WHO official who was speaking right after the June letter, expert letter was received by the WHO, and she was very critical of the letter and she tried to disparage it by saying, did you notice that the recommendations come from engineers and aerosol experts and other scientists and physicists, you know, disparaging the fact that the WHO letter really reflects a broad range of opinion.

And, I think that is part of what is missing here in Ontario. You know, we need to have all the right people at the table. Now, there are science people, there are science tables and they do include a variety of experts, but in my experience, those science tables have been more or less tick-box acknowledgments of participation. The worker safety experts have not been seriously listened to.

You know, we need to have people around the table with equal authority to discuss issues and to make those decisions. We need to be guided by the clinical experience of frontline staff, including nurses. And I think we need to really emphasize the importance of the precautionary principle, that we can't wait for scientific certainty.

And I think, you know, one of the

problems is that what has been applied to the airborne transmission debate by public health infectious disease people is a requirement of certainty.

Now, certainty is really important with respect to deciding whether a vaccine is safe or a medical procedure or a new pharmaceutical, but requiring that level of scientific certainty before protecting workers is really wrong-headed and it is really we should be taking a precautionary approach for that, not that type of rigid certainty.

And I think, you know, I mentioned earlier humility. This is a very striking quote from the SARS Commission Report, and it said, and I quote from a physician who was not identified, and he said:

> "I think what SARS did is it humbled us and it also made us realize that even when we think we know everything, we don't.
>
> We have to be attuned to the clues that come from the ground up, not necessarily from the top to the bottom.
>
> So I think humility makes the

4

Legislative Assembly of Ontario transcript of Nicolas Smit's July 13, 2020 presentation to MPPs for the Standing Committee on Finance and Economic Affairs meeting on the effects of Covid-19 on Ontario industries. He explains the importance of elastomeric respirators, the negligence that had occurred to date, how they were readily available and could be used to protect workers in a lot more industries than just health and long term care, how MPPs needed to ensure the 100,000 Doug Ford's office had bought the month prior be distributed, how MPPs needed to ensure the public learn about the government recommendations to use them as N95 alternatives and the misinformation the government had been spreading so that healthcare workers would stop being actively prevented from using them.

Source: https://www.ola.org/sites/default/files/node-files/hansard/document/pdf/2020/2020-08/13-JUL-2020_F040.pdf

Legislative
Assembly
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Assemblée
législative
de l'Ontario

Official Report of Debates (Hansard)

F-40

Journal des débats (Hansard)

F-40

Standing Committee on Finance and Economic Affairs

Comité permanent des finances et des affaires économiques

COVID-19 study

Étude sur la COVID-19

1st Session
42nd Parliament
Monday 13 July 2020

1re session
42e législature
Lundi 13 juillet 2020

Chair: Amarjot Sandhu
Clerk: Julia Douglas

Président : Amarjot Sandhu
Greffière : Julia Douglas

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—the municipality has waived penalty interest on taxes and receivables—

The Chair (Mr. Amarjot Sandhu): One minute.

Mr. Doug Lawrance: —and anticipates a loss of $73,000;

—daycare revenue loss, $320,000;

—building permits, $76,000;

—recreation losses to date, based on lack of memberships, court closures, socials etc. are closing in on about $120,000.

Municipal receivables have increased in comparison to this date last year by about $400,000. The municipality is currently in a negative cash flow position and will be relying on a demand loan to operate for the remainder of the year.

The municipality of Sioux Lookout requests that the provincial government, with or without collaboration from the federal government, provide meaningful, unconditional operational funding assistance to municipalities to recover from the impacts of the COVID-19 pandemic. We also are requesting that non-application-based capital stimulus funding be provided to stimulate the construction industry in Sioux Lookout.

The Chair (Mr. Amarjot Sandhu): Thank you so much. We'll move to our next presenter, Nicolas Smit. If you could please state your name for the record, and you can get right into your presentation.

Mr. Nicolas Smit: Hi, everyone. My name is Nicholas Smit. The reason I'm here today is to stress the importance of using PPE, such as P100 respirators, to significantly manage the effects of COVID-19 on various sectors of the Canadian economy.

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Some of you may know that I was able to get Health Canada to approve P100 respirators for health care workers on June 12, and that Doug Ford started an internal investigation of these respirators on June 16, and bought 100,000 respirators from 3M at the end of June. Some of you may also know that I was able to get Carol Hughes, through tax incentives, to increase donations to hospitals from companies that donate PPE to hospitals.

For those of you who have never heard of the P100, I'll explain that later on in the presentation.

Canada currently stands at about 107,000 cases, with Ontario making up about one third of those cases. Here is a breakdown of cases. Most of the cases in Canada are represented by hospitals and long-term-care homes, with the food industry making up a close second. These numbers do not include firefighters, police, EMS and transit workers, border or airport staff, and they also make up a significant portion of these cases in Canada.

The reproductive rate is the number of people that one person with COVID-19 will infect. On June 28, it stood at two and a half, but on average it's about one person will infect one other person.

Moving on to how COVID has directly affected different industries: In the food industry, severe outbreaks at food plants have resulted in millions of animals being euthanized, and farmers have also had to destroy food crops and discard millions of dollars' worth of eggs and food. This has resulted in a significant increase in food prices.

Besides the increase in food prices, there is a significant increase in community transmission from these areas. A good example of this is a Cargill plant in Alberta that had 947 cases, and another 500 cases directly linked to this food plant.

With migrant workers not being able to practise social distancing and not being provided PPE, there are also a lot of outbreaks among migrant workers.

With the job loss across Canada due to COVID, there has been a large increase in people turning to the food bank.

In the construction industry, companies have either been forced to shut down, since they have not been able to source PPE, or they've had to let staff go. Some companies have also had to take dangerous shortcuts, since they can no longer find PPE, such as using vacuum cleaners to get asbestos out of a P100 filter so they can reuse it.

Since projects take longer to work on and there have been more delays with the supply chain issues and with work permits being harder to find, fewer plants are being able to get their projects worked on, and projects take longer to complete.

In the mining industry, a lot of remote mine sites have had to close down since they are afraid of passing the virus on to local communities every two weeks when their workers go through these sites. The reduction in mines has also decreased the supply chain and increased costs for businesses, and increased job loss as well.

For tourism, most tourists are afraid to go to bigger cities like Toronto for fear of getting COVID, since COVID is prevalent in the larger cities. With tourism in smaller cities, such as Sioux Lookout, locals are sometimes afraid that the tourists going to these areas will bring in COVID, coming from the different communities. For example, if you look at tourists from international areas like the US, this is not being mitigated properly, so they could bring in significant community spread in these areas. If you look at tourism spending, if the virus is contained versus not contained, you will see that Canada could bring an additional $26 billion in tourism spending, and an extra 187,000 jobs would be able to be returned to the economy.

The Chair (Mr. Amarjot Sandhu): Three minutes.

Mr. Nicolas Smit: Other problems due to COVID are: Schools are closed, so parents have to take time away from work. This puts an extra strain on businesses they work at.

In the prison system, prisoners face lengthy delays, adding additional court costs to the provincial government to keep them incarcerated. This prevents individuals from having a fair and speedy trial. Also, since PPE is not being supplied properly in prisons, outbreaks are occurring among inmates and staff.

For health care workers: Health care workers make up one in five cases since they do not have adequate PPE protection. A good example of the lack of protection is that 30 paramedics in Ottawa were removed from duty on July 11 due to the lack of N95 respirators.

Solutions: By providing PPE, such as N95 or P100 respirators, to large areas where outbreaks are occurring, this would make a significant reduction in cases across Canada by at least 30%. Providing migrant workers and staff at food plants with PPE would reduce food shortages, because plants would no longer need to close, and this would bring a decrease in food prices. Providing airport staff and passengers with proper PPE would prevent community spread from coast to coast and from international travel, and would also reduce the fear of people travelling on an airline, because they would be properly protected.

If we were able to properly provide every single health care worker in Canada with their own respirator, we would also reduce one in five cases. If mass production of PPE were started, such as more P100 respirators, companies like construction companies would not have to lay off staff and would be able to finish projects on time. With less people being sick, as well, there would be less sick days needed so companies would save money from having to pay for replacing those workers.

For schools, if we were able to convert gymnasiums, libraries, theatres and parts of cafeterias into makeshift classrooms, this would allow for much greater social distancing. Holding classes outside, such as gym or theatre class—

The Chair (Mr. Amarjot Sandhu): One minute.

Mr. Nicolas Smit: —would also further maximize the distancing.

P100 respirators: For those who do not know what a P100 respirator is, these are respirators that are rated to stop 99.97% of airborne particles. N95 respirators, for example, stop only 95% of those particles.

The CDC and NIOSH have recommended P100 respirators as the top choice for health care workers for COVID-19. On April 20 they issued guidelines to help health care workers use these respirators properly. The CDC has also used P100 respirators since 1996 to protect health care workers from viruses. American hospitals used these respirators in 2009 to protect health care workers from H1N1, then stored them away for 10 years and are taking them out this year to start protecting health care workers from COVID-19. Unlike N95s, P100s are built to be reused for years, and one respirator could provide a health care worker with protection for the rest of this pandemic.

Mario Possamai, who was the lead investigator and is currently leading the investigation for the Canadian Federation of Nurses Unions, explained to MPs—

The Chair (Mr. Amarjot Sandhu): Thank you. Your time has come up.

We'll have to start with the questions now. This round of questions will start with the independent members. MPP Blais?

Mr. Stephen Blais: Thank you, Nicolas, and Mayor Lawrance for your presentations.

Your Worship, you were describing the challenge that you've had with some infrastructure projects as a result of not being able to, in effect, import labour from Manitoba and other jurisdictions. I'm wondering, has that changed as a result of various aspects opening up or are you still facing that challenge today?

Mr. Doug Lawrance: The Watay project has gradually gotten under way and those workers are largely from western Canada. They're highly skilled tradespeople doing the gridline construction.

The other projects are not underway yet. Some of them are in their development stage, and it involves engineers and developers coming as well as contractors, so that has not rolled in yet.

Mr. Stephen Blais: Is the decline in revenue from the airport and other sources going to affect your ability to actually get in on the ground on some of those infrastructure projects?

Mr. Doug Lawrance: The decline in revenue from the airport? No, the airport is owned by the municipality. It's run as a separate corporation. Generally we have the second-busiest airport in northwestern Ontario. First Nations are in lockdown, and I believe the First Nations will remain in lockdown perhaps longer than we do. Normally we would have about 400 high school students here, and we have other training facilities here. These are all northern First Nations students coming.

Health care is the biggest employer in our community, with great losses there. We invested $15 million in our airport last year, expanding the terminal, the final phase of a 10-year plan. Right now we will be in difficulty paying back these loans.

Mr. Stephen Blais: Fair enough. It's obviously a very challenging situation.

You mentioned your municipal accommodation tax and that, with the lack of tourists, you're not seeing revenue from that. Do you know, did your RTO give up RTO funding in exchange for the tax or are you still receiving RTO funding at the same time?

Mr. Doug Lawrance: We don't have, as far as I know, RTO funding here at all.

Mr. Stephen Blais: Okay, fair enough. You also mentioned your desire to see some kind of operating transfer from the province to help you offset your deficit. What is your projection on a municipal deficit this year?

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Mr. Doug Lawrance: These numbers that I've presented here are sort of hot off the press. At this time, I think we're projecting in the range of—revenue losses are now at close to $900,000. Some of our savings would be in the range of $500,000, but that's going to flip some of the things when we have to bring staff back. I'm guessing that we'll be getting close to $1 million if things proceed the way they are. Our tax-generated budget here is $11 million from tax revenue, so this represents about 10% of our tax-generated budget.

Mr. Stephen Blais: Yes, 10% is enormous. This morning, the minister indicated that they might be considering allowing municipalities to offset deficits over the course of many years, as opposed to paying for it the next year.

The Chair (Mr. Amarjot Sandhu): Two minutes.

Mr. Stephen Blais: Do you see that as a potential option for Sioux Lookout?

Mr. Doug Lawrance: If the Premier says it's an option, I guess it might become an option.

Mr. Stephen Blais: I mean a real financial option.

I just want to mention to Nicolas Smit that he gave a fantastic presentation, and we appreciate everything he's advocating for and everything that his company is doing to keep Ontarians safe.

Just back to Mayor Lawrance: What else can you share with us in terms of your tourism sector? Because now we're getting into stage 3 and that's a big challenge, that the tourism and hospitality sectors seem to be the hardest hit and are going to take the longest to recover. Where would your tourists come from? Would they come from across Canada, out of province? Would they come from the US, from Europe? What challenges do you foresee in terms of getting the tourists back to Sioux Lookout?

Mr. Doug Lawrance: So I look at it as we have two markets for tourism. One is the United States, and that's our hunting and fishing. It's prime, pristine country for hunting and fishing, and 95% of the traditional type of tourism is from the United States. It's going to be very difficult for that industry to recover here. I think there's going to be a reluctance among Americans to travel, and we don't know how those restrictions will work.

Another part of it: I know that there have been programs put out there to help, but they're not grants; they're loans. So what the tourist outfitters are asking for is, don't make it a three-year payback; make it a 10-year payback. They're going to be recovering so slowly. There's not going to be a big bounce back. It's going to be a very gradual bounce back. So extending that loan repayment over a longer term would be very beneficial.

On the other side of tourism, it's health care and education tourism, and that 70% of the economic activity—

The Chair (Mr. Amarjot Sandhu): One minute.

Mr. Doug Lawrance: —is directly related to servicing First Nations and First Nations people. Some health care will be required and mandatory, but I believe the First Nations are much more careful of COVID transmission, especially given crowded housing conditions and a history of disease going into communities from the south. That will also be a long, slower recovery for here.

Our tourism isn't really in Canada or in Ontario. It's in Canada for the health care for the remote First Nations, health care and education, and from the northern United States, largely, the Midwest, for the tourist outfitters. I hope that answers it.

1430

Mrs. Gila Martow: Thank you so, so much. Once again, I want to thank Mayor Lawrance and Mr. Smit for their presentations and for joining us today.

The Chair (Mr. Amarjot Sandhu): Okay, we'll go to the opposition side now for their first round. I'll start with MPP Gélinas.

Mme France Gélinas: Thank you, Mayor Lawrance and thank you, Mr. Smit.

I was wondering, Mr. Smit, if you would be interested in finishing your presentation, as well as if you have brought a picture of what a P100 looks like. In and around Sudbury and Nickel Belt, they are used widely by the mining industry. Some people who work for the mines have to carry them with them at all times because of the risk of contamination of air where they work. All of us in and around Sudbury, we have seen them before because they carry them around their necks. We see them at Tim Hortons etc. But I'm sure there are some people on the line who have never seen a P100, if you wanted to show them, Mr. Smit.

Mr. Nicolas Smit: Sure. Well, thank you, France, and thank you for your help getting the government to look at these in March.

First of all, I'd like people to know I do not represent a company; I'm just an individual. I did this on my own and not on behalf of any company. I want people to know there's no conflict of interest.

I'll try to quickly finish the presentation. Can you guys see the screen right now?

The Chair (Mr. Amarjot Sandhu): No, we can't.

Mme France Gélinas: Not yet, but it should come.

Mr. Nicolas Smit: Okay. Sorry, I'll try again.

The Chair (Mr. Amarjot Sandhu): Yes, we can see it now.

Mme France Gélinas: All good.

Mr. Nicolas Smit: All right.

So Mario Possamai was the lead investigator for the SARS investigation and is currently leading the investigation for the Canadian Federation of Nurses Unions. He explained to the MPs at the House of Commons meeting on Monday at Canada's COVID response that Canada needs to stop assuming N95s are the end-all solution, and they should start looking at buying more P100 respirators. This is a graph of cases in Ontario from the time our government first looked at using P100 respirators. As you can see, the cases have constantly gone up. There have been quite a few missed opportunities to be able to get these approved.

By April 2, the government had known that these would protect users, but they were afraid because they didn't know how to protect people from the air leaving the exhaust valves, since they were made for industrial settings, so it only protects the person using it.

What CDC hospitals have been using for decades is a surgical mask. That's a quick and easy solution, but the government did not realize this, so until June they were saying that these P100 respirators were too dangerous to use under any circumstance and they also prevented hospitals from using their stocks.

I forwarded the committee an email from Doug Ford's office, which showed the internal investigation from my email stemming from June 16, which resulted in Doug Ford purchasing these respirators from 3M for 100,000 health care workers. Now, 3M is not the only manufacturer; there are over 20 manufacturers that could provide these P100 respirators to health care workers in other industries that need them.

For health care workers, they vary between $16 and $30 apiece, and to supply every single health care worker would only cost $8 million to $15 million, depending on the manufacturer. I don't want to show a conflict of interest, so I'd like the government, if they were to purchase these, to contact different manufacturers.

The Chair (Mr. Amarjot Sandhu): Three minutes.

Mr. Nicolas Smit: The only manufacturer that has so far been contacted is 3M. Companies like GVS, MSA Safety and Dorma have yet to be contacted by the government, even though they each have enough P100 respirators to provide every health care worker in Canada with their own. Also, they could provide them to people like paramedics in Ottawa, so that instead of having to take 30 front-line paramedics away, since they don't have N95s, they can be provided with these P100 respirators.

Firefighters have been using these as well in Manitoba, since Manitoba and Quebec have been more familiar with these respirators. Since April, paramedics and firefighters have used these. Even a week after Health Canada approved these, firefighters in Mississauga were begging Ford's government for help since they ran out of N95s and they did not realize P100 was even an option until MSA Safety contacted them.

I've tried to get the government to be transparent and asked Doug Ford to let the public and the media know about the problems, since they've prevented health care workers from using these, even when health care workers had no other option. And that is one of the reasons why health care workers in Canada represent such high numbers: because they do not have the PPE they need to stay safe. A lot of times, they're only given a surgical mask which, as most of you know, is not safe enough protection when you're working on COVID patients.

I can try and provide you with pictures. I tried to send PDFs to the committee meeting yesterday, although, I'm not sure if you received it. Some of those are the New York Times articles describing P100 respirators. There are also medical studies that I provided the committee as well that show 2,000 health care workers in Pennsylvania and Mississauga used P100 respirators for four weeks in April and May, and after the four weeks were done, not a single person wanted to return to N95 because of how effective they were.

They're also a significant cost reduction. Since they could be reused, one respirator could provide a health care worker or a food worker or a migrant worker or a tourism worker enough protection for the rest of the pandemic at a fraction of the cost of what the government is trying to do to fix problems.

The Chair (Mr. Amarjot Sandhu): One minute.

Mr. Nicolas Smit: I'm hoping that one of you guys on the committee today can talk to Ford and ask him to finally let the media know. I have had the media try to speak to the government. Kate Rutherford from CBC News had tried to reach out for over four weeks to Ford. But since Ford has made so many mistakes in the early approval process, he does not want to admit those, so he's not returning any calls to the media.

So that is something that maybe health care critics like France Gélinas could do in Parliament: Ask Doug Ford why he decided to purchase these respirators and still keep the public in the dark.

Now GVS is only able to supply health care workers in Canada, but other companies like MSA Safety and Dorma can provide construction companies, so they no longer have to shut down their projects. They could provide prisoners with these, as well, so that there are no more outbreaks in prisons, and they could provide airport staff—

The Chair (Mr. Amarjot Sandhu): Thank you. I apologize to cut you off.

We'll have to move to the government side for the second round now. MPP Smith.

Mr. Dave Smith: First off, I'd like to correct a statement that MPP Blais made. Never, at any point, has Minister Clark said that we were going to extend the length of time that a municipality could carry debt; in fact, we introduced legislation just in the last couple of days, and it wasn't included in that. He was very clear about that earlier today.

Mayor Lawrance, one of the things that I've heard is—I'm on the northern Ontario jobs and recovery team, looking at what we can do to open up the economy for northern Ontario. One of the things that has come back to us has been some of the challenges that construction companies have had with respect to apprenticeships and projects not being long enough for them to have an apprentice there. They made a request for us to allow multiple companies to sponsor the same apprentice. Are you finding in Sioux Lookout that there's a challenge for the construction industry to get apprentices, because some of the projects don't extend long enough?

Mr. Doug Lawrance: In Sioux Lookout, we largely depend for larger projects—first of all, out-of-town contractors come in. The projects are different, so we have local subtrades that will work on apprenticeships. We have some First Nations training agencies that take advantage of programs to get apprentices on projects, but the nature of the ones you're speaking of, that would be the larger contractors that come in from Thunder Bay or Winnipeg and places beyond that. So I can't answer your question or give you an informed answer.

Mr. Dave Smith: When those companies are coming in, are they able to attract some of the people from Sioux Lookout on those projects? There has been a suggestion that we should be looking at putting in some scoring on RFPs to allow for more local content, with respect to employees being brought in. Would that be beneficial in Sioux Lookout?

Mr. Doug Lawrance: No, that would probably be detrimental. If you want to work in Sioux Lookout, you're working. We have a very low unemployment rate. It would be something that might work in a larger context in northern Ontario, but in Sioux Lookout, we have—one third of the job openings in northwestern Ontario currently are in Sioux Lookout. There are tremendous opportunities for employment here. That would not be beneficial. That kind of score might be detrimental.

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Mr. Dave Smith: Detrimental for you as a municipality?

Mr. Doug Lawrance: Because it would box us in. If you look at the map and all the dots in the northwest, so in northern Ontario, they're not all the same. Municipalities aren't the same. We're unique in different ways: one, because we service the north so intently; and another, Legislative Assembly of Ontario transcript of Nicolas Smit's April 5, 2022 presentation to MPPs for the Standing Committee on Finance and Economic Affairs meeting on Pandemic and Emergency Preparedness. He spoke about his work with the highest levels of the U.S. government including a federal task force for President Biden he sat on, the pandemic work he did in Canada, the widespread negligence caused by the province around elastomeric respirators plus the many implications it had for the safety of workers and the public. He also alerted the MPP's to Doug Ford's office purposefully withholding 100,000 elastomeric respirators and that this caused significant harm to workers.

Source: https://www.ola.org/sites/default/files/node-files/hansard/document/pdf/2022/2022-04/05-APR-2022_F016.pdf

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Official Report of Debates (Hansard)

F-16

Standing Committee on Finance and Economic Affairs

Pandemic and Emergency
Preparedness Act, 2022

2nd Session
42nd Parliament
Tuesday 5 April 2022

Chair: Ernie Hardeman
Clerk: Michael Bushara

Journal des débats (Hansard)

F-16

Comité permanent des finances et des affaires économiques

Loi de 2022
sur la préparation
aux pandémies
et aux situations d'urgence

2e session
42e législature
Mardi 5 avril 2022

Président : Ernie Hardeman
Greffier : Michael Bushara

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We appreciate the government's commitment to funding the Ontario Learn and Stay Grant and the Nursing Education Initiative, as well as actions to begin addressing barriers faced by foreign-trained nurses when trying to register and practise in Canada. These are important initiatives.

However, I am hearing from RPNs every single day who tell me that they are feeling overwhelmed and undervalued, and one important piece of Bill 106, schedule 7, stands to make problems potentially worse, unfortunately.

The government has announced that it will use schedule 7 of this bill to make permanent a $3-an-hour wage increase for PSWs and DSWs. I want to be really clear that RPNs fully support this pay increase for their colleagues. That is a really important thing. What our members can't understand is why that pay raise is only going to be available to their colleagues but not to them. RPNs are often the direct supervisors of PSWs in long-term-care homes, and this wage increase has left many of them earning just barely more and in some cases less than the colleagues they supervise. RPNs work with an increasing scope of work, legal liability and accountability to a professional college, compared to the PSWs with whom they work. This lack of recognition from the government for the work that RPNs have done and continue to do is extremely distressing. Our organization is already seeing the number of RPNs working in long-term care beginning to decline, and the proposal to increase PSW wages but not RPN wages is sure to make that problem worse. At a time when our province is just beginning to emerge from a global pandemic into a human resources crisis that sees us desperate to recruit new nurses, the government has announced their intent to take an action that could potentially and maybe inadvertently make the problem worse. Thankfully, it doesn't have to be this way.

There is a simple solution to not only reduce the number of RPNs who are leaving our long-term-care homes and our hospitals—and by the way, at the same time we're trying to increase substantially, by 27,000 care providers, the staffing in long-term care, the numbers of RPNs are significantly dropping, and we are struggling to attract new people to the profession. The solution is to pay RPNs a fair wage that is appropriately matched to the skill and value they bring to Ontario's residents, patients and home care clients. When the regulations under schedule 7 of Bill 106 are drafted, make sure that RPNs are included in the $3-an-hour increase as well.

The government will say that they've already taken steps to recognize the work that nurses have done throughout the pandemic by offering a one-time retention bonus of $5,000. While this will serve to offset the expenses incurred by nurses through and because of the pandemic, the simple reality is that this is in no way enough. Nothing short of a permanent wage increase is going to enable us to successfully retain RPNs or attract new ones to the profession. It's a one-time payment, and it doesn't even equal $3 an hour for a full-time staff member.

If the government is truly committed to addressing the health human resources crisis that our province faces, if they are truly committed to ensuring that our seniors in long-term care get the highest level of care possible, if they truly are committed to treating front-line health care workers with the respect they deserve, then there is only one path forward: Pay nurses what they deserve, and use schedule 7 of the legislation to extend the $3-an-hour wage increase to RPNs.

Thank you again for giving me the opportunity to speak today. I look forward to your questions.

The Acting Chair (Mr. Logan Kanapathi): Thank you.

I will now call on Nicolas Smit. Please state your name for Hansard, and you may begin now.

Mr. Nicolas Smit: My name is Nicolas Smit. I have the honour of being the only Canadian working on President Biden's new task force working on PPE and PPE supply chain strategies for pandemics and biological threats. I've also had the pleasure of working with the White House, as well Democrats and Republicans in the House and Senate, since January on PPE pandemic problems. However, I first started solving pandemic issues in Canada in March 2020, when I worked with MPP France Gélinas to get the province to look into and eventually recommend elastomeric respirators as N95 alternatives, to solve the N95 shortage crisis for our health care workers.

In November 2020, I convinced the Ontario Nurses' Association to take the province to court using my resources. The province quickly settled that court case in less than a week, which led to several new improvements in health care worker safety.

For a pandemic and emergency preparedness plan to be successful, we need to be able to act quickly, before the problems occur and get exponentially worse. We need to be able to rely on the tools needed when we need them. A pandemic plan needs to include all the major problems related to the virus, not just hospitalizations and deaths. Long COVID is extremely prevalent, with studies showing that around one in three people get long COVID.

While vaccines are great at reducing hospitalizations and death, they cannot prevent infection or long COVID, which is why in July 2021, the CDC recommended that people start using masks to stop transmission, no matter their vaccination status. Surgical masks can be held tightly in place with mask bracers, giving those wearing them protection from airborne transmission in addition to droplet protection. Our health care workers and others are only given loose-fitting surgical masks without bracers. Instead of using the best masks and working our way down to the ones that offer the least amount of protections when better masks aren't available, we've been using the masks with the least protections and rarely going up to N95s, or the more protective elastomeric respirators, which have been readily available for years.

To be ready to react to pandemics, it is important to have a well-stocked PPE stockpile, which should include a combination of surgical masks with bracers, N95s and elastomeric respirators that can be immediately distributed on a moment's notice. The big bonus to elastomeric respirators is that they can be safely reused for several years, and the filters only need to be replaced once a year. Some hospitals in the US are still using the same ones they used for H1N1. And while N95s expire after three years, elastomeric respirator filters expire after five.

The more elastomeric respirators we buy now, the less masks we'll need to buy in the future. For example, if you buy one million elastomeric respirators now, that's one million individuals in Ontario who will immediately have the best protection possible for the next few years, and then those respirators can be put in storage at the end of the pandemic and kept for future emergencies, resulting in less need for additional mask purchases for the provincial stockpile. Had the province used the stockpile of 100,000 elastomeric respirators they bought in July 2020, they would have rarely needed to buy more surgical masks or N95s since that time for health care workers.

Two of the biggest failures to date that continue to be repeated in the US and in Canada are the failure to support domestic PPE manufacturers, and elastomeric respirators being locked up while also refusing to let the public know about the government recommendations to use them.

Having PPE made domestically is a luxury we will soon lose. Two years ago, Canada had no domestic PPE capabilities. A year ago, Canada had enough domestic PPE to be completely self-reliant. Yet almost all PPE is bought exclusively from non-Canadian companies. Canadian manufacturers have offered to provide enough N95s and elastomeric respirators to keep everyone in the province fully protected from transmission. However, the province has refused to buy masks that aren't from 3M, an American company, so our domestic manufacturers are now closing or are significantly reducing production levels.

Allowing the remaining domestic PPE manufacturers to go under will mean a return to problems like we experienced in 2020, when Canada had to rely on China, which stopped exports just as Canada desperately needed them. If we want to be able to rely on quality and effective PPE, now is the time to ensure we support our domestic manufacturers, so that they continue to have the PPE needed for this wave and any future waves we face.

At first, health care workers and other government employees were told that they couldn't have better masks due to shortages. The mask shortage was declared over a year ago. However, employees are now told that they don't deserve, nor do they need, better masks, despite the government having them readily available.

In my hometown of Sudbury, Health Sciences North has been in outbreak since 2021. This not only endangers health care workers but also forces hospitals to cancel surgeries, life-saving procedures and tests.

An even bigger failure than the collapse of the domestic PPE industry is elastomeric respirators. Health care worker unions have repeatedly asked for them to be distributed to health care workers, so they can finally put an end to health care workers getting infected. Unions have explained that they provide much higher levels of protection than N95s, can be safely reused for years, are more comfortable, plus are the most cost-effective respirators available. However, they're not being used in any meaningful way.

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In his testimony to the Ontario long-term-care commission, Mario Possamai, the lead SARS investigator, explained that the biggest failure by the Ontario government during the pandemic was the lack of urgency in getting elastomeric respirators to health care workers. Mario provided similar testimony on July 6, 2020, in the House of Commons.

In June 2020, after getting the province and federal government to recommend elastomeric respirators as N95 alternatives, I was able to get Ford's office to launch an internal investigation into health care workers being actively prevented from using them due to the lack of awareness about the new Ontario Health and Health Canada recommendations to use them.

On June 29, 2020, David Morgado, Ford's executive assistant, let me know the results of the investigation. David said that the province bought 100,000 elastomeric respirators from 3M and that they would all be distributed to hospitals and long-term-care homes within weeks. Combined with the 22,000 elastomeric respirators hospitals we already had, the additional 100,000 was enough to have kept every health care worker in Ontario fully protected from transmission since July 2020.

When the province received the 100,000 respirators, France Gélinas let me know that the province decided they would keep the stockpile in government warehouses since the province was under the assumption that health care workers wanted to stay in surgical masks. When unions found out months later that the province locked them up for future pandemics, they started fighting to get them distributed. However, the government still refuses to distribute them, despite twice telling MPP John Fraser that hospitals could easily access the stockpile and use all the elastomeric respirators they want to.

Had Ontario businesses known about elastomeric respirators, they could have used them to stop workplace outbreaks and the large economic damage workplace outbreaks cause.

The Acting Chair (Mr. Logan Kanapathi): You have one minute left.

Mr. Nicolas Smit: Not mentioning elastomeric respirators publicly and in Parliament has resulted in the problems going undetected by journalists. Health critics like France Gélinas and John Fraser will hopefully be able to use public pressure to get the stockpile distributed and get answers as to why Ford's office thought it was better to keep health care workers at risk than use the stockpile they bought to eliminate the risk of infection.

It is not too late to significantly improve our current pandemic and emergency preparedness to get us through the pandemic while minimizing the economic and health impact. Without fixing the current problems, we will be left even more unprepared for future pandemics and emergencies, and we'll keep repeating the same mistakes over and over, with worse results each time. I hope you can take the time needed to investigate these problems and consider these things in future plans to quickly get ahead of, and be prepared for, future pandemics and emergencies, no matter how bad they get.

Thank you for your time.

The Acting Chair (Mr. Logan Kanapathi): Thank you for your presentation.

This round of questions will start with the independent member. You have 4.5 minutes for your presentation and questions. MPP Hunter.

Ms. Mitzie Hunter: I want to thank the three presenters for taking the time to join us here.

I'm going to start with WeRPN, the registered practical nurses of Ontario. I want to begin by thanking you for your incredible work and the work of your members. I happen to have a loved one who is in the care right now of some wonderful nurses. They're the ones who are always there when I visit. I really value the care, the professionalism. I feel that you're essential to a good health care system.

When you talk about the government's lack of consideration of the classes of work within the health care system—we support personal care workers getting a wage increase and bumping that up. Certainly, the Ontario Liberals support making that permanent. It's something that really does need to happen. However, when you're looking at one sort of band, you have to look at how it affects those who are next to it. So the compression that you're experiencing is unfortunate, given the fact that everyone has to work together in the one setting.

If you could just speak a little bit in terms of what is helpful to your members—you did say applying that $3-an-hour increase, because then the nurses would sort of increase along with the personal support workers, and you think that's a way to start. Are there other aspects that you want the committee to consider at this time?

Ms. Dianne Martin: I think the most important thing to recognize with the wage compression is that RPNs are nurses, and while they're no more important to the care of people, as you know, than PSWs, they do provide nursing care, which requires a great deal more education and a great deal more legal accountability. As they go closer and closer to PSWs in wages, instead of closer to the RNs, which is the group of people who hold the role most close to the RPNs, there becomes very little reason to stay.

Some have gone to work as PSWs to make the same amount of money—or a very similar amount—without anywhere near the pressures. Others have said, "I can week in so many places in society these days, as the need for all kinds of workers increases, that I just can't give that much of myself"—which is what nurses are doing these days—"to not be recognized."

The Acting Chair (Mr. Logan Kanapathi): You have one minute left.

Ms. Dianne Martin: I've heard it said in Hansard—a sort of rationalization that nurses have eight steps of pay for them to get to the top, so they're getting pay raises yearly, but that's RNs. RPNs actually only have three levels, and within two years of graduation they have hit the top pay level and are reliant on the pay increases that they get through negotiation to be able to manage the cost of living etc., or they fall back. So they've been spending many years now falling far behind where they should be in wages.

Ms. Mitzie Hunter: Thank you for bringing this so clearly to the committee.

I want to thank Brad, as well, for all the work you do with Community Living. You definitely do great work in my community in Scarborough, and I really want to say thank you for that.

The Acting Chair (Mr. Logan Kanapathi): We are moving on to the government members. MPP Yakabuski.

Mr. John Yakabuski: Thank you very much to all the presenters today.

I'm going to start with you, Brad Saunders, and thank you very much for joining us today and for your presentation.

I've been around long enough to remember when the way we treated those with developmental disabilities in our society was a far cry from what it is today. We're certainly grateful for the changes.

I remember, growing up, that I started grade 1 at the same time as a young boy who was really, really struggling. I think he was only there for grade 1, and then he disappeared. He was taken away to Smiths Falls, to Rideau Regional. I remember getting in touch with him again once he was an adult and I was running a hardware store in little old Barry's Bay. Jimmy and I would chat every morning because he'd be out at 7 o'clock and I'd be out at 7 o'clock cleaning up in front of the place and making sure we were ready to open those doors. Those were some of the best conversations I ever had, because he was such a sports fan. He could tell you who scored all the goals the night before, who hit the home runs and all of this—great conversations. I'm grateful that we have a community living system—because he returned to Barry's Bay as an adult—that has changed the lives of so many.

I have a nephew who is 41, who is in the community living system. Our daughter, who is also 41—I shouldn't be telling you ages—worked in it, and now she is working for the board of education. She spent years working with autistic children. She was a specialist in that regard.

So I do want to thank you for the work that you do as an organization—but all of the people who have dedicated so much of their lives.

In those organizations, we have DSWs. That is the bottom of the pay scale, basically. I spent 15 years in opposition and almost four now in government meeting with those workers and their representatives—and how they were challenged with difficulty negotiating with the government at the time for 15 years about being recognized for the work that they do.

The pandemic exposed a lot of weaknesses that were pre-existing, but it has given us an opportunity to pause and reflect on where the impacts are in our system and what we can do better.

1530

You talked a little bit today, Mr. Saunders, about the wage enhancement. Can you give us more on making it permanent for DSWs and PSWs? Can you give us a little more meat on that bone, if you would, about how this is going to impact the lives of those workers and, by extension, the lives of every client that you serve in Community Living?

Mr. Brad Saunders: Thanks for your comments. I really appreciate the personal experiences that you've had. That's great to hear.

When I knew I was coming here, yesterday afternoon I sent an email out to our staff and said, "Tell me how this $3 an hour is going to impact you as an employee." I was planning to incorporate some into my time, but there were so many that it was hard to pick and choose. But it's a significant impact—anywhere from a supervisor saying, "My son got married, and I was able to put aside a few extra dollars towards that wedding," to somebody saying, "I could quit my second job," which I sort of talked about. The impacts are vast.

What we find with the $3—again, I think of it in terms of an investment. It's people choosing this career and then being able to stay in this career and make a go of it. When we're giving relatively anemic increases of a few hundred dollars a year, or less than a third of the rate of inflation, it's not an attractive job to get into and to stay in.

I'd encourage governments, as you said, to really take the pause and look at how we got to where we got to. It was decades of underpaying staff and not funding organizations—to be able to do that. This three bucks is a nice correction, but we would do ourselves a disservice to not consider how to continue that in the future and invest so that for the next pandemic, the workforce is strong, the organizations are strong and the families are well supported with workers who work in their home.

Mr. John Yakabuski: Well, I can tell you that it takes a special person to work in that field. I have these conversations with Heidi, our daughter. Heidi would say that she doesn't want my job, but I conversely say, "Heidi, I couldn't do your job." It takes a special person to be able to do that, and we're grateful for all of those people.

Mr. Brad Saunders: Yes. I cannot say enough about our workforce.

Mr. John Yakabuski: Thank you so much for being with us today.

The Acting Chair (Mr. Logan Kanapathi): MPP Cuzzetto.

Mr. Rudy Cuzzetto: I want to thank Brad for being here. I was reading here that your organization has been around since 1948, and you have 80 locations—well, pretty well—in the GTA. I want to thank you for all the work that you're doing in the community.

I'm involved, in Mississauga–Lakeshore, with DEEN Support Services, which does this type of work to help people with disabilities. As well, we're trying to bring in the first-ever YMCA abilities centre into our riding. What we're trying to do is train Paralympians in this facility. It would be right at the corner of Lakeshore and Mississauga Road, at a new development that's happening there. I've been working very closely to get this into our riding, because it would be good if we could do that for the future for the people in the province Ontario.

I want to talk again about the $3-an-hour enhancement. Will that help retain and hold our PSWs in this field?

Mr. Brad Saunders: In developmental services, it's DSWs, but I take what you mean.

Absolutely. We have tracked this fairly closely. The pandemic was obviously a different time—

The Acting Chair (Mr. Logan Kanapathi): You have one minute left.

Mr. Brad Saunders: Sure—so what's a regular turnover rate pre-COVID versus post-COVID? Our experience has been, if you provide a living wage and people are able to earn an income that they can live off of, they're more likely to stay and progress through an organization. So it absolutely will help with retention.

Mr. Rudy Cuzzetto: How much time do we have?

The Acting Chair (Mr. Logan Kanapathi): You have 51 seconds.

Mr. Rudy Cuzzetto: Okay.

On our RPNs: Will you help us lobby the federal government for funding to increase our funding to our health care system in all the provinces across Canada to 35% from 22%?

Ms. Dianne Martin: I think that we have a really solid understanding that the ability provincially to fund our health care system is—

The Acting Chair (Mr. Logan Kanapathi): Thank you. I'm sorry to cut you off.

At this time, we are moving on to the official opposition members. MPP Michael Mantha.

Mr. Michael Mantha: Nicolas Smit, be prepared. I'm going to be coming back to you, because you were singing to my ears.

Brad, my son is a DSW up in Sudbury. Prepare yourself, because he's going to be going somewhere in that field. I took a few notes here—that dedication and passion is something that I learned from my son and his teachers as he was growing up to through school. The impact is going to impact my bank account—giving him those increases. Anyway, it does take a special person to get into that field, and I recognize a lot of the benefits that they bring not only to their clients but to the community as a whole.

Dianne, repealing Bill 124 would be a huge step, which isn't included in this bill. And yes, a front-line worker is a front-line worker is a front-line worker, and you definitely deserve those increases, as does everybody else in this province.

Nicolas, my friend, I want you, in a 30-second elevator version, to tell me—I don't know if you can see me, but I want you to describe the benefit of this particular mask, what it does and what it doesn't do.

Mr. Nicolas Smit: It's more what it doesn't do. It doesn't protect from airborne transmission. The sides leak. They're not a tight fit, which is why health care workers have been asking for N95s and elastomeric respirators—because it has a tight seal. It does provide some droplet protection, but so do N95s and elastomeric respirators.

The surgical masks can be useful. But you need to pair it with a mask bracer so that it does seal, so that there are no edges around that can let the air in and out.

Mr. Michael Mantha: When you talked a little bit earlier about the actual supplies that are available in the province—this is an N95 mask that is being produced by FNPI, First Nations Procurement Inc. They're a branch of Dent-X Canada. They're producing those masks in both Wiikwemkoong First Nation on Manitoulin Island and in Sagamok First Nation on the North Shore and at Dent-X here.

Would you be surprised if I told you that I was standing in a warehouse with between four million to four and a half million masks that are available to this government—in order to make them available to not only our hospital staff but to our visitors who come into hospitals, long-term-care homes and each and every student in this province?

Mr. Nicolas Smit: I'm not surprised. This is actually a common problem. Eclipse Automation's CEO, Steve Mai, warned CTV News in February of last year that the same thing was happening to his company. He had, I believe, 15 million Health Canada-approved N95s, and the Canadian and Ontario governments didn't want to buy them, even though they were being made in Ontario. They only wanted to buy 3M N95s from the Brockville plant because of the contract they signed. There was even a June 22, 2021, Ontario Health internal meeting called a "knowledge exchange," where they explained that hospitals in Ontario want to only fit-test health care workers on 3M respirators going forward. So it's going to be more common than not in the future.

Mr. Michael Mantha: I want to describe to you what happened to me when I went to a hospital. I was wearing my N95 mask, which is not only safer for me but for those around me. I was disarmed. I was told to take it off and put on a mask that doesn't protect me at all, and I was told that this is the policy that is being imposed at all of our hospitals in Ontario, at all of our long-term-care homes. We are being disarmed, and we are putting our loved ones and those who are most at risk in danger. Why are we doing that?

Mr. Nicolas Smit: It's because the government guidelines allow you to go to the minimum. Most people don't realize that N95s and elastomeric respirators offer the higher levels of protection.

The other danger, besides just going to another mask, is that when you remove your mask in the entrance of a long-term-care home, for example, or a hospital—the virus can stay suspended in the air. So not only do you risk yourself putting on a more dangerous mask that won't protect you, but you're also exposing yourself to a fleeting exposure of COVID. It no longer takes 15 minutes to infect an individual; it could take mere seconds to infect somebody, and that person doesn't even have to be in the same room, since the air can linger for hours.

Mr. Michael Mantha: So if we have these masks that are available, and it has been known—and just so you know, for your information, I've been raising this for months now. I've provided a mask to each and every one of the MPPs inside the Legislature, to security, to Hansard, to the Clerks, to the Speaker of the House. They've been provided to each and every individual in this House. They are there. They're available.

Why wouldn't the government even reach out or return a call to let this Ontario company know, "We have a problem with your price," or "We have a problem with your quality." One way or another, the company would be able to address the question, but if there are no questions that are being asked—why is that? Why wouldn't we look at what is being produced, a stone's throw away from us, that would significantly change the spread of this particular virus, not only in Ontario but across this country? Why aren't we taking those steps?

1540

Mr. Nicolas Smit: It's very important, even, for example, when it comes to teachers. Teachers can really benefit from using those FN95 masks from Wahnapitae First Nation and Sagamok First Nation. It's not just health care workers who can benefit.

Every single government employee should be given an N95, at a minimum, and then government employees will no longer have to worry about getting infected and bringing that infection home to their families—because not only when they bring it home to their family do they infect their partners and children, but that ends up continuing the cycle of transmission because those kids bring it to school, and their spouses or partners bring it to their workplace and continue it.

So protecting workers with N95s, at a minimum—especially government employees, when the government is responsible for their safety—is going to help stop a lot of community transmission in addition to workplace outbreaks.

Mr. Michael Mantha: Interestingly enough, the supply that the government did have—

The Acting Chair (Mr. Logan Kanapathi): You have one minute left.

Mr. Michael Mantha: Okay. This will be more like a statement.

The government provided over 900 dental facilities or businesses with N95 masks, free of charge. Would you not think that it would have been beneficial to provide them to those students who, when they went back to school after March break, were concerned about being exposed from long exposures—as far as being away from the schools and then coming back and gathering in those incubators? But those N95s were not provided to students. Are the lives of students not as important, are the lives of our seniors not as important as dental offices? I'm not taking away from dental offices; those are important as well. But do you not think, when we have an Ontario-made product here, available to us—why wouldn't we have made that available?

Mr. Nicolas Smit: Absolutely. We have the means to make schools safe, so why don't we?

Mr. Michael Mantha: Thank you very much. I really enjoyed our discussion.

Mr. Sol Mamakwa: So that would help—if the government repealed Bill 124?

Ms. Dianne Martin: Oh, yes. I think for many people—not just nurses and PSWs and DSWs. I think it would be impactful for many professions who are feeling a real pressure these days in the face of inflation and those sorts of things, when they are facing Bill 124. Ultimately, yes, that needs to be the goal for all of us.

Mr. Sol Mamakwa: When we talk about the impacts on patients, the Ontarians we provide service to—how does this continue to impact the patients we serve?

Ms. Dianne Martin: Do you know why we don't talk about that as much? It's because it hurts too much.

I have a daughter who's a nurse, and she'll come home and tell me about the day she's had, where she had to take care of twice as many patients as she usually does. The pain in her eyes when she describes the bits of care that didn't happen, that provide dignity and care to others, breaks my heart. That's what I hear from all sorts of nurses—the tremendous trauma they have when patients are in need of the basics of comfort, and they cannot provide it because of the shortages of staff. We actually don't talk about it as much as we should because of the pain involved. That is our purpose for being there, and that is where the trauma is coming from.

Thank you for asking that.

Mr. Sol Mamakwa: Thank you for that answer.

Brad, maybe you can answer that question as well—the impact on patient care, the impact on patients themselves, the people we service, on the increase for the PSWs?

Mr. Brad Saunders: Individuals with a developmental disability who we supported across the city had a really tough time during COVID-19—unable to leave home, in places where parents weren't able to visit. We found that the impact was pretty significant. We did as much as we could virtually—staff giving people tools; we did deliveries of boxes and fun stuff—but as was said, the impact on staff was traumatic. We had five people lose their lives through COVID: two of our staff members and three individuals we support. To still see people rally and come to work and get behind that in a very scary time was remarkable.

So I agree that trauma is going to be something that we'll have to deal with, and people resetting to a new normal. We'll have to deal with that as it comes. But we're certainly expecting to see more of that within our workforce and with people we support as well.

1600

Mr. Michael Mantha: How much time do we have left?

The Acting Chair (Mr. Logan Kanapathi): You have one minute and 30 seconds.

Mr. Michael Mantha: That's perfect.

Nicolas, can you please make an effort to reach out to my office so you and I can connect? I would really like to have some follow-up discussions with you. My name is Michael Mantha. I'm the MPP for Algoma–Manitoulin. Please reach out to my office. We need to have further discussions.

Dianne, 50,000 RPNs across the province—a lot of them feeling the pressures, a lot of them feeling the disrespect.

Do you have any statistics in regard to how many RPNs have actually decided to walk away (1) because of the burnout; (2) because of disrespect; and (3) just because of everything that has been put on their shoulders with their additional duties and their scope? Do you have those numbers?

Ms. Dianne Martin: A year ago, our surveys showed us that 34% were considering leaving the profession. We believe that it's quite a bit higher now, just because of the resignations that come through our membership, across our desks, and their reasons for leaving. We're getting ready to repeat that survey—but a year ago, 34%.

The Acting Chair (Mr. Logan Kanapathi): Thank you.

A reminder to all presenters: The deadline for written submissions is 7 p.m. on Wednesday, April 6, 2022.

ONTARIO EQUAL PAY COALITION
NORTHERN ONTARIO SCHOOL OF MEDICINE UNIVERSITY
CANADIAN ASSOCIATION OF PPE MANUFACTURERS

The Acting Chair (Mr. Logan Kanapathi): I will now call on the Ontario Equal Pay Coalition. Please come forward.

Welcome. Please state your name for Hansard purposes. You may begin now.

Ms. Fay Faraday: I'm Fay Faraday. I am the co-chair of the Ontario Equal Pay Coalition. It is a coalition of businesses, professional organizations, labour organizations and community organizations that has, since 1976, been the primary advocate for pay equity in Ontario. I want my submissions to be focused on schedule 7.

What I want to say off the top, just so you get the highlights, is that schedule 7 of Bill 106 is unconstitutional. It violates public and broader public sector workers' charter rights to freedom of association. It violates women workers' charter right to equality. It eliminates workers' rights to challenge government interference with their pay. And it eliminates fundamental pay equity rights by defining pay equity obligations of the government out of existence. Instead of repealing Bill 124, it doubles down on this. And all of this has been presented in a way as if what is happening is a gift to women. The government has, in the Hansards, in introducing the bill, said that this is to enable RNs to get their one-time $5,000 retention pay, and that it's to enable making the $3 pandemic pay permanent for PSWs. But what it doesn't tell you—and it wasn't apparent anywhere in the Hansard—is that in order to do that, they're ripping up pay equity rights. And they're doing that a week before Equal Pay Day, which is next week, on April 12. In the current arc of how this is proceeding, this bill will be introduced on Equal Pay Day, which is an added insult to women.

Section E

Unpublished government studies and presentations showing the government knew Covid was spread by airborne transmission and that the risk of infection would be minimized by using tight fitting respirators like N95s or elastomeric respirators

1

Ontario Science Table PowerPoint presentation from December 23, 2021 explaining that Covid-19 is spread by airborne transmission, not by droplets, and that there is a need to better protect people by using high quality and tight fitting masks.

Source: https://covid19-sciencetable.ca/wp-content/uploads/2021/12/Slide-Deck_Ask-the-SAT_20211223-2.pdf

2

Public Health Agency of Canada document from August 14, 2020 discussing all the studies and reports on how Covid is spread by airborne transmission through HVAC systems and the evidence to show that there was a risk to workers that Covid could linger in the air and spread to others over long distances.

Source:
https://www.dropbox.com/sh/j1ht46ckc3njymp/AAD2Vuz7_vP8FdOEeQnO-QNqa?dl=0

3

Public Health Agency of Canada document form March 12, 2021 discussing all the studies and reports that indicate Covid is spread by airborne transmission and additional evidence to show that Covid could linger in the air and spread to others over long distances.

Source:
https://www.dropbox.com/sh/j1ht46ckc3njymp/AAD2Vuz7_vP8FdOEeQnO-QNqa?dl=0

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Ontario Science Table PowerPoint presentation from December 23, 2021 explaining that Covid-19 is spread by airborne transmission, not by droplets, and that there is a need to better protect people by using high quality and tight fitting masks.

Source: https://covid19-sciencetable.ca/wp-content/uploads/2021/12/Slide-Deck_Ask-the-SAT_20211223-2.pdf

Ask Ontario's Science Table: Omicron Edition

This slide deck was prepared by the members of the Behavioral Science Working Group and Science Advisory Table to respond to frequently asked questions about staying safe this holiday season given the 5th wave of COVID-19 and Omicron variant.

SCIENCE TABLE

COVID-19 ADVISORY FOR ONTARIO

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Ask Ontario's Science Table

Omicron Edition, 23 December 2021

- Omicron is here and spreading fast. Rising numbers put hospital capacity at risk and put even more pressure on the healthcare workforce. Supported by stronger public health measures, our actions can help relieve this pressure and blunt this 5th wave. As numbers rise, **it is worth reconsidering how we approach the holiday season this year.**
- In the face of Omicron, no single action is perfect (not even COVID-19 vaccination). Think of each action as a slice of Swiss cheese: each slice has holes, but the more slices you use, the more holes get covered. During this holiday season, we recommend a combination of the following actions:
  - ✓ **Get your 3rd vaccine dose as soon as you are eligible;** and **the time is now to get your 1st or 2nd dose** if you haven't yet
  - ✓ **Consider postponing indoor gatherings. If you do gather, keep them very small and attend as few as possible** (and do not attend if you have any symptoms of COVID-19)
  - ✓ **If you don't have symptoms of COVID-19, use rapid tests (if available)** *immediately* before any indoor gatherings and self-isolate if positive. Remember that a negative rapid test does not mean you do not have COVID-19 and **other layers of protection need to be used**
  - ✓ **Breathe fresh and filtered air as much as possible**: gather outdoors, and improve indoor ventilation
  - ✓ If with people who do not live with you this holiday season, **wear a high quality, well-fitted mask indoors** and **physically distance** (especially if eating or if you remove your mask indoors)

You might have questions about how to approach the holidays this year. We answered some of these questions with the best advice we currently have as we continue to learn about Omicron.

Who are we?

We are scientists, clinicians and health system leaders living and working in Ontario who have been volunteering our time to evaluate and report on what the science is telling us about COVID-19 and what Ontarians can do about it.

We are also moms, dads, daughters and sons. We are doing our best to use what we know today to help improve our collective tomorrow, because we truly believe that through science, we will get through this pandemic together.

Ask Ontario's Science Table

Omicron Edition, 23 December 2021

"All the adults in my family are double-vaccinated, our 8 year old child just got her first dose, and we have a toddler in daycare. We've seen the high Omicron case numbers. **How can I make sure everyone is as safe as possible** for the holidays?"

Omicron is here. Vaccines protect against hospitalization and severe illness, but 2 doses are not enough against getting infected with Omicron. Where does that leave holiday plans?

1. **Get your 3rd dose** as soon as possible if eligible. If you or someone you know is eligible and has not yet gotten their first dose, it is not too late to get vaccinated
2. **Reconsider your indoor gatherings over the next few weeks. Attend none, or prioritize as few as possible** and try to see the same people each time
3. **Keep gatherings small** – smaller than the limit suggested by your public health authority
4. **Plan outdoor activities instead** – outdoors is much lower risk, and a great option for gathering with children under 5 who are not yet eligible for vaccines
5. **It's ok to change or even cancel your plans**; it's not what we want but it's how we can stay safe with Omicron. Make sure to connect outdoors or virtually, and plan how you'll get together in a few months instead

"I'm hearing that Omicron spreads more than Delta. **Should I wear a mask at home when people visit?** If so, how do we eat together?"

Yes, wear masks this holiday season. Omicron is different from earlier variants and is spreading REALLY fast. Masks work for reducing transmission. That means:

1. **Wear a mask when visiting** those outside your household even if everyone is vaccinated
2. **Upgrade your current mask supply**, if you can, with high-quality masks such as a well-fitted blue surgical mask (or surgical mask under a cloth mask) or a KN/N95 (if available)
3. If you are eating with people outside of your household, **keep physical distance**
4. **When gathering indoors with those outside your household, even with masks, make sure to have as much fresh or filtered air as possible** by opening windows or screen doors (another reason for ugly sweaters!) and turning on hood fans, especially if you remove masks to eat

"I got invited to a few parties over the holidays – **what should I do to stay as safe as I can**?"

The best way to stay safe from Omicron is to **move gatherings outdoors or virtual, or postpone and plan** to gather once this wave passes. That's obviously not the answer we want to give, but limiting indoor contacts even if vaccinated is the safest approach while we learn more about Omicron. But we need parties, connections and celebrations to look forward to – so commit to a do-over in a few months once we get past the Omicron wave.

SCIENCE TABLE

COVID-19 ADVISORY FOR ONTARIO

Who are we?

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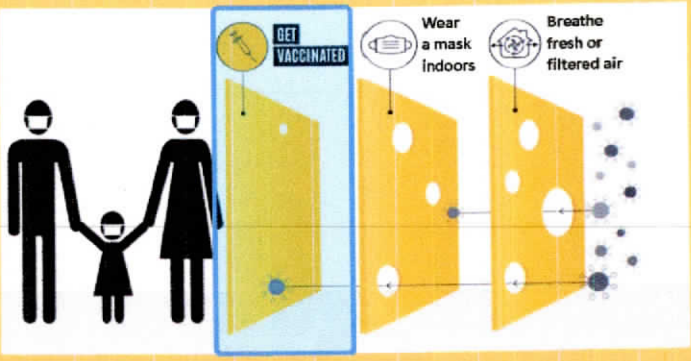
We are also moms, dads, daughters and sons. We are doing our best to use what we know today to help improve our collective tomorrow, because we truly believe that through science, we will get through this pandemic together.

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Protection Layer 1: Get vaccinated and boosted

No single action is perfect. There are holes. Like Swiss cheese.
More protection layers = fewer holes.

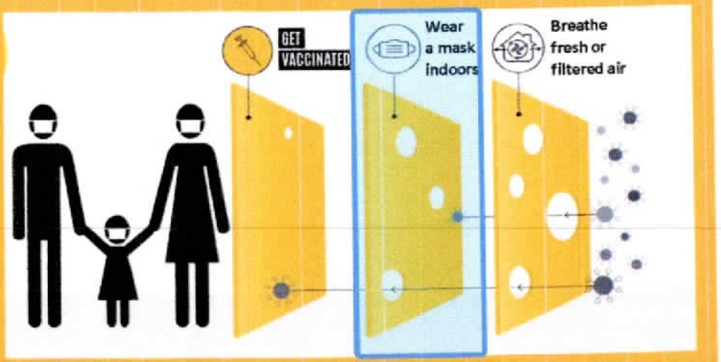


"I'm double vaccinated; will this protect me from getting Omicron?"	2 doses worked well to prevent infection and severe illness for Delta. Omicron is not Delta. A 3rd dose is really important for preventing Omicron infection and keeping up your immunity. Everyone 18+ in Ontario is eligible for a 3rd dose 84 days after their 2nd dose. **Get your 3rd dose as soon as you're able, especially if you are at increased risk.** If you or someone you know is not yet vaccinated, **it's also not too late to get a 1st or 2nd dose (especially given Omicron)**. Vaccinators are working over the holidays to give as many doses in as many places as possible. Consider helping people you know find an appointment if they need help.
"How safe are the COVID-19 vaccines? What side effects do we know of?"	**COVID-19 vaccines are safe and effective**. More and more eligible Ontarians (over 11 million so far) have had at least two doses. Generally, you can expect a bit of a sore arm, some fatigue or a headache for up to a day or two, similar to other vaccines. Serious side effects (like severe allergy) are rare and treatable.
"I want to keep my kids safe – should they get vaccinated? What are side effects?"	COVID-19 vaccines were carefully reviewed and approved by Health Canada for use in children aged 5-11 in Nov 2021. **COVID-19 vaccines reduce the risk of serious illness and long-term side effects in kids**. Vaccines also **reduce their risk of transmitting COVID-19 to others**. As of Dec 20th 2021, over 7.2 million children in Canada and the U.S. have been vaccinated against COVID-19 and there have been 8 confirmed cases of myocarditis and pericarditis, all mild and treatable. Myocarditis (inflammation of the heart) or pericarditis (inflammation of sac around the heart) are exceedingly rare, usually mild, and very treatable. Remember: this inflammation can happen with COVID-19 infection too and at a much higher rate than vaccine side effects. Book a vaccine appointment for your 5-11 year old as soon as you are able, and feel free to ask the vaccinator any questions you might have.

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Protection Layer 2: Wear a good quality mask inside

No single action is perfect. There are holes. Like Swiss cheese.
More protection layers = fewer holes.



"Should I wear a mask when visiting family and friends over the holidays?"	Masks stop the virus from getting in or out of your nose or mouth and so wearing a mask indoors with those who aren't in your immediate household can help keep everyone safe. If you can, make sure you **wear a high-quality, well fitted mask when indoors** with people you do not live with.
"I see all sorts of different masks used; which masks should I use or not use?"	Any mask is better than no mask, but some masks are better than others. Given how transmissible Omicron is, **upgrade your masks if possible**. The Public Health Agency of Canada recommends wearing a **high-quality mask such as blue surgical mask** (2 is better than 1: Consider wearing a surgical mask under a double-layered cloth mask) **or KN/N95 (if available)**. What about wearing a mask outdoors? Not necessary so long as you can physically distance, but is a good way to keep your face warm!
"Am I wearing my mask correctly?"	It's worth checking! We've been wearing masks for a while but we now know more about how to wear masks so they're more effective. The key is in the fit. Think of a mask as a filter: you want as much air as possible going through the mask, not around it. Search for 'Knot and Tuck' on YouTube for how to improve fit for surgical masks.
"How long can I wear a mask before throwing it out?"	Surgical masks and KN/N95's can be reused more than once and for multiple days if you let your mask air out in a clean, dry space. Dispose of soiled masks.

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Protection Layer 3: Breathe fresh / filtered air

No single action is perfect. There are holes. Like Swiss cheese.
More protection layers = fewer holes.

"I keep hearing that COVID is airborne and it's better to be outside, but how do I keep the air in my home as safe as possible?"

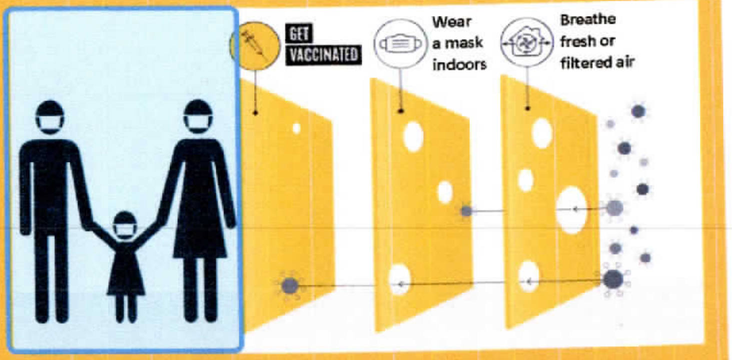
Yes, SARS-CoV-2 (the virus that causes COVID-19) is airborne which means it can float ar linger unless the air in the room moves out of the room as quickly as possible. **The safes those who do not live in your household is outdoors**. When possible, a safe way to soci and meet for an outdoors walk or hike, at an outdoor skating rink or park.

If you are visiting indoors at home with people you don't live with:
- **Maintain physical distance**, especially when having to remove your mask to eat
- If you have ceiling fans, turn them on and make sure they are pulling air upwards
- Change furnace filters (or ask landlord or building manager if filters have been chang
- Run your HVAC under the "on" feature instead of "auto"
- Consider purchasing or borrowing a HEPA filter
- Turn on and leave on exhaust fans in bathrooms and stovetop when people visit
- **Open windows** or screen doors to **help fresh air circulate**

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

Protection Layer 4:
Postpone or keep gatherings small

No single action is perfect. There are holes. Like Swiss cheese.
More protection layers = fewer holes.



"How many people would be best to have at my home over the holidays to stay safe given Omicron?"	**Postpone or keep indoor gatherings small:** we are all desperate to get together and celebrate over the holidays. Consider postponing, but if you do get together, keep gatherings as small as possible. Attending large gatherings increases your chances of being exposed to Omicron, having to quarantine and getting sick. **Quality over quantity for this holiday season:** if you do decide to safely connect with others indoors over the holidays, prioritize some gatherings and save others for once we get through this wave
"Should I use rapid tests with everyone before they come in my home?"	It's frustrating that not everyone has been able to get rapid tests. We hope this improves. If you have access to rapid tests, ask everyone to do a rapid test **immediately before** visiting. If the test is *positive* stay home and self-isolate. If the test is *negative* that doesn't guarantee someone doesn't have COVID-19. Because the virus replicates quickly in the body, people can become contagious shortly after testing negative, so **other layers of protection (wearing masks, physical distancing, ventilation) are also needed to keep everyone safe even with negative tests**.
"I have small kids who can't be vaccinated yet. Should we get together with others over the holidays?"	We know parents of young kids are balancing risks of COVID-19 with the need for support and time with loved ones like grandparents. **Rapid tests are not perfect and cannot always detect the virus so using them does not eliminate risk completely.** If your loved one is at higher risk of severe illness from COVID-19 (for example: is elderly, immunocompromised, or lives in a retirement home or long-term care) strongly consider postponing or making the visit virtual this year; but if they do visit, make sure every layer of protection (wearing masks, physical distancing, ventilation) is used by everyone.

2

Public Health Agency of Canada document from August 14, 2020 discussing all the studies and reports on how Covid is spread by airborne transmission through HVAC systems and the evidence to show that there was a risk to workers that Covid could linger in the air and spread to others over long distances.

Source:

https://www.dropbox.com/sh/j1ht46ckc3njymp/AAD2Vuz7_vP8FdOEeQnO-QNqa?dl=0

Emerging Evidence on COVID-19

COVID-19 Summary of Heating, Ventilation, Air Conditioning (HVAC) Systems and Transmission of SARS-CoV-2

Introduction

What is the impact of Heating, Ventilation, Air Conditioning (HVAC) systems on SARS-CoV-2 virus transmission?

This evidence brief summarizes relevant literature up to August 13, 2020 on the potential role of HVAC systems in the transmission of SARS-CoV-2. Evidence from other related respiratory infections (i.e. SARS, MERS-CoV) was also identified to improve our understanding of the possible role of HVAC systems in transmission of similar viruses.

Key Points

- SARS-CoV-2 RNA contamination in air samples and HVAC system surfaces (e.g. air grates and filters) from healthcare settings indicate it may be possible for SARS-CoV-2 to spread through the HVAC system (Table 1). The viability of isolated viral RNA has not been confirmed by cell culture in the majority of studies, with the exception of two studies that collected viable virus from air samples in COVID-19 patients' rooms.
    - Lednicky and colleagues demonstrate viable SARS-CoV-2 can be found in air 2 to 4.8 meters away from patients in hospital care settings, using virus culture (RT-qPCR) (Lednicky et al., 2020). Moreover, the authors suggest virus particles becoming inactivated during sample collection to be the reason for studies failing to culture viable SARS-CoV-2 in air samples.
    - Air samples from a hospital setting treating SARS-CoV-2 patients were contaminated with viral RNA. Minor indications of cytopathic effects and viral replication were observed in an air and surface sample (Santarpia et al., 2020).
- A single study reports on the presence of SARS-CoV-2 RNA downstream of air filters in a hospital ventilation system, however the viability of the isolated virus was not evaluated (Table 1). As such, the potential for SARS-CoV-2 infection from air circulated through a ventilation system remains unestablished.
- A small number of SARS-CoV-2 clusters has been attributed to air conditioning units and air recirculation (Table 2) at a dine-in restaurant (Lu et al., 2020), bus ride to a worship event, and a professional workshop (Shen et al., 2020). Strong air jets created by air conditioning units and the recirculation of indoor air are considered likely modes transmitting infectious respiratory particles

from the index case to other susceptible individuals nearby (Yuguo Li et al., 2020). Other investigations into SARS-CoV-2 outbreak in a cruise ship have failed to implicate the HVAC system in infection transmission (Almilaji & Thomas, 2020; Xu et al., 2020).

- Transmission of other coronavirus infections (i.e. MERS and SARS) predating SARS-CoV-2 point to an association between poor ventilation (i.e. insufficient movement and clearance of contaminated indoor air) and infection transmission, this association likely extends to SARS-CoV-2 (Table 4).
- Expert statements and guidance documents advocate for HVAC testing and certification to ensure properly functioning systems to minimize air contaminants in indoor settings based on local standards.
- Commentaries and reviews that consider the body of evidence on the topic, and mathematical models, consistently report that increasing the flow of outside fresh air into built environments (e.g. open windows) and reducing occupancy within enclosed indoor settings, where feasible and appropriate, to be simple strategies that can mitigate SARS-CoV-2 transmission in indoor settings (Dai & Zhao, 2020; Dietz et al., 2020; Morawska & Cao, 2020).

Overview of the Evidence

Various investigations have aimed to evaluate the evidence connecting HVAC systems and indoor air to infection transmission, both before and following the emergence of COVID-19. The variability of studies in their design, experimental settings (healthcare vs. non healthcare), examined viral pathogens, and HVAC systems do not allow direct comparison of the literature.

Nine surveys of environmental contamination in hospitals with COVID-19 patients provide a snapshot of virus laden surfaces (Table 1). These studies are of moderate risk of bias as they are point in time observational surveys that confirm the presence of viral RNA, but many do not confirm the infectiousness of identified viral particles. Four outbreaks where HVAC systems were investigated as a source of infection transmission have been described in various retrospective epidemiological investigations (Table 2). These epidemiological investigations are at high risk of bias, as demonstrated by the conflicting reports about the Diamond Princess cruise ship where different analytical approaches and assumptions led to different conclusions. Mathematical models and computer simulations were parameterized using observational data from a small number of outbreaks to explore scenarios of how HVAC systems can impact SARS-CoV-2, MERS, and SARS transmission (Table 2 and Table 4). Caution should be exercised when interpreting these findings, as the extent to which the results can be generalized is variable.

There are several knowledge gaps in the current COVID-19 literature. The available evidence has not directly established infectious SARS-CoV-2 particles can travel through an HVAC system or system generated air flow to cause infection when reintroduced to a susceptible population of individuals. Evidence on the optimal number of air changes per hour required in non-healthcare settings, ideal ventilation system configurations, and the role of HEPA filters in mitigating SARS-CoV-2 transmission is limited.

CONTENTS

LITERATURE ON INFECTION TRANSMISSION AND HVAC SYSTEMS 3

LITERATURE ON INFECTION TRANSMISSION AND HVAC SYSTEMS

There are no studies that specifically quantify SARS-CoV-2 transmission risk due to HVAC systems or indoor ventilation. Nine studies conducting environmental sampling identified SARS-CoV-2 viral RNA in air samples and on surfaces of HVAC system components (e.g. pre and post air re-circulation filters, air dampers, air grates) in healthcare settings treating COVID-19 cases; virus viability and infectiousness was not established in the majority of studies (Table 1). Thus, dispersion of viable SARS-CoV-2 by a HVAC system has not been demonstrated.

A single cluster of COVID-19 cases from three unrelated families are reported to be associated with air circulation and uni-directional air streams generated by a ductless air conditioning unit in a Chinese restaurant (Lu et al., 2020). In this cluster, the index case from Family A dined upwind of Families B and C, who did not have any other connections or exposures to Family A. Staff and other patrons were not affected. Air re-circulation in enclosed environments linked to air conditioning units, indoor ventilation and fans are reported to have played a role in two unrelated SARS-CoV-2 outbreaks, from a religious worship event and a professional workshop(Shen et al., 2020). Moreover, the HVAC system on-board the Diamond Princess cruise ship that had a large COVID-19 outbreak was also investigated for evidence of its contribution to SARS-CoV-2 spread. One study took into account the lock-down, quarantine period, and incubation period and provides evidence that the quarantine of passengers in cabins stopped transmission on board the ship and no transmission could be attributed to ventilation (Xu et al., 2020). A second study that analysed the same data suggests transmission via circulating air may have occurred, but failed to account for the incubation period (Almilaji & Thomas, 2020).

Investigations of clusters of coronaviruses that predate the emergence of COVID-19 have been linked to poor indoor ventilation and HVAC systems being non-functional (Haselbach et al., 2009; Y Li, Huang, Yu, Wong, & Qian, 2005; Satheesan, Mui, & Wong, 2020; Wong et al., 2004). Multiple investigations into a MERS-CoV cluster within a patient isolation unit attribute high air flow near an infected patient, imbalanced supply and exhaust airflow rates, and a malfunctioning exhaust and air supply to infection spread to healthcare workers (Y Li et al., 2005; Wong et al., 2004). A US study of acute respiratory infections occurring in several army barracks of different designs attributed the HVAC configurations (i.e. the number of individuals that come in contact with and share recirculated air in an HVAC system) to increased infection rates, however they failed to rule out direct transmission (Haselbach et al., 2009). Although this literature is not specific to SARS-CoV-2, it does provide evidence that poor ventilation and non-functional HVAC systems are associated with respiratory infection transmission in indoor settings.

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), a leading US authority on HVAC system design, operation and maintenance, published a position statement on COVID-19, in April 2020. The position statement advocates for properly functioning HVAC systems as these systems are designed to reduce contaminants in indoor air and as a result minimize airborne transmission of pathogens such as SARS-CoV-2. This statement has been adopted by other organizations, including the Center for Disease Control and Prevention, in back to work and business re-opening guidance.

Table 1: Literature on SARS-CoV-2 contamination of air and air vents in healthcare settings

Reference	Publication Title	Key Outcomes
Environmental Surveys		
(Lednicky et al., 2020) *preprint*	Viable SARS-CoV-2 in the Air of a Hospital Room with COVID-19 Patients.	Air samples were collected from a designated SARS-CoV-2 hospital ward housing infected patients, in Florida, USA. VIV AS and BioSpot air samplers that preserved virus viability were used for sample collection. Viable virus was isolated from air samples collected 2-4.8 meters away from infected patients, thus supporting viable SARS-CoV-2 virus dispersion within airborne aerosols in healthcare settings. Genomic sequencing establishes a relationship between viral RNA isolated from air samples and an infected patient occupying the ward. Finally, viable virus was only isolated from air samples collected without a HEPA filter cover on inlet tubes, based on cytopathic effects on Vero E6 cells. Isolated virus concentrations in air samples ranged from 2-74 $TCID_{50}$ units/L of air.
(Horve et al., 2020) *preprint*	Identification of SARS-CoV-2 RNA in Healthcare Heating, Ventilation, and Air Conditioning Units.	Surfaces of air handling units in a healthcare facility treating COVID-19 patients in Oregon, USA were tested for the presence of viral RNA within HVAC systems. The presence of viral RNA was confirmed by RT-PCR. 25% of sampled surfaces from multiple air handlers were contaminated with SARS-CoV-2 RNA; positive samples were identified on pre-filters (35%), supply air dampers (20.8%), and final filters (16.67%). Recovered viral gene copies decreased from the pre-filter to final filter surfaces.

		The supply air dampers and air sampled in this study represent re-circulated air that is mixed with outside air pre and post HVAC filtration. Samples were found to be contaminated with viral RNA, which is concerning. Since no attempt was made to culture the virus, further research is needed to further investigate the implications of this study; typical filtration systems in healthcare settings may not completely eliminate the passage of viral particles.
(Cheng et al., 2020)	Air and Environmental Sampling for SARS-CoV-2 Around Hospitalized Patients with Coronavirus Disease 2019 (COVID-19).	Air samples near asymptomatic and symptomatic COVID-19 patients (n=6) with and without surgical masks in an airborne infection isolation room (AIIR), in Hong Kong and China, were tested for SARS-CoV-2 contamination. All collected air samples were negative for SARS-CoV-2 RNA.
(Chia et al., 2020)	Detection of Air and Surface Contamination by SARS-CoV-2 in Hospital Rooms of Infected Patients.	Environmental surface and air samples from airborne infection isolation rooms (AIIR) housing COVID-19 patients in Singapore were tested for SARS-CoV-2 RNA. Among the contaminated surface samples, the floors followed by air exhaust vents were the most contaminated. 66% (n=2/3) of the air samples collected from AIIR environments were SARS-CoV-2 RNA positive. The authors suggest the presence of SARS-CoV-2 in the air is likely highest during the first week of illness when respiratory viral load is high. The infectiousness of the recovered viral particles were not assessed.
(Liu et al., 2020)	Aerodynamic Analysis of SARS-CoV-2 in Two Wuhan Hospitals.	SARS-CoV-2 RNA concentrations in aerosol samples, the size and deposition of airborne SARS-CoV-2 aerosols from Wuhan, China hospital settings was quantified. Sampled environments included patient care, public and staff areas within or near a hospital, and field hospital settings. In patient care areas SARS-CoV-2 concentrations from air samples were very low to undetectable, suggesting the negative pressure isolation room and high rate of air exchange was effective.

		In the field hospital setting, the greatest SARS-CoV-2 suspended aerosols were identified in a temporary patient toilet room (1 m^2 area) with low ventilation. In public areas low to undetectable SARS-CoV-2 suspended aerosol concentrations were identified for the majority of sampled public areas. However, virus concentrations were detected in two public sites, a department store entrance and an outdoor site near the hospital. Results suggest high traffic flow and crowding may play a role in the presence of SARS-CoV-2 detection in air samples. Healthcare worker staff areas had the highest SARS-CoV-2 concentrations and aerosol size distributions. Samples from the field hospital staff personal protective equipment removal and changing rooms demonstrated the greatest virus concentrations and aerosol size distribution. The authors hypothesize the observed high concentrations are due to resuspension of virus containing aerosols from healthcare worker PPE surfaces and apparel. The infectiousness of recovered viral particles was not established.
(Guo et al., 2020)	Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020.	35% of air samples collected from hospital ICU and general wards in Wuhan, China tested positive for SARS-CoV2 virus particles. Positive samples were identified near air outlets (35.7%), patient rooms (44.4%) and physician offices (12.5%). Virus-laden samples were most often identified downstream from COVID-19 patients. In the ICU ward space, patient care and treatment areas were positive for SARS-CoV-2 virus aerosols, and positive samples were identified up to 4 meters from a COVID-19 patient. In the general ward's space, areas positive for SARS-CoV-2 were within 2.5 meters upstream of the patient. No SARS-CoV-2 virus aerosols were identified in patient corridor areas.

		The infectiousness of recovered viral particles was not established.
(Ong et al., 2020)	Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient.	Survey of air samples collected from negative pressure airborne infection isolation rooms (AIIR), containing anterooms and bathrooms, in the dedicated SARS-CoV-2 outbreak center in Singapore, housing three symptomatic confirmed cases of COVID-19. Although some environmental samples were found to be SARS-CoV-2 contaminated, no air samples were positive for SARS-CoV-2 virus. The infectiousness of recovered viral particles was not established.
(Santarpia et al., 2020) *preprint*	Aerosol and Surface Transmission Potential of SARS-CoV-2.	Air and surface samples from isolation spaces housing COVID-19 cases at the University of Nebraska, United States were collected and tested for SARS-CoV-2 viral RNA by RT-PCR. 63.2% of air samples from patient isolation areas were positive for viral RNA, particularly under the patient's bed and window ledges at the edge of the room. Based on airflow modelling, the authors suggest turbulent eddies (i.e. swirling of a fluid and the reverse current created when the fluid is in a turbulent flow) that form under the patient's bed, and dominate airflow carrying respiratory/viral particles away from the patient toward the edges of the rooms led to the observed contamination. 58.3% of air samples collected in hallways outside of patient isolation areas also contained the virus. The surface of an air grate was found to be contaminated with SARS-CoV-2; the highest viral load observed was recovered from this study surface (1.75 copies/μL). The study findings suggest viral aerosol particles can be produced by infected individuals even during the absence of

		cough, with the virus travelling distances greater than 6 feet (1.8 meters). Cultivation of the isolated viral RNA could not be confirmed via Vero E6 cell assay due to low concentrations of recovered virus. However, minor indications of cytopathic effects and viral replication were observed in an air and surface sample.
(Zhou et al., 2020)	Investigating SARS-CoV-2 Surface and Air Contamination in an Acute Healthcare Setting During the Peak of the COVID-19 Pandemic in London.	Levels of SARS-CoV-2 surface and air contamination in a London, UK hospital at the peak of the COVID-19 pandemic was investigated. Environmental surface swabs from clinical and public areas of the hospital were collected. Viral RNA was detected by RT-PCR in 52.3% of the collected surface samples (most often in COVID-19 patient care areas), and 38.7% of the air samples collected. Contaminated samples were more frequent in areas occupied by a COVID-19 patient. The reclaimed virus could not be cultured in Vero E6 cell lines, as the recovered viral load was less than 30 Ct.
Mathematical Models		
(Dai & Zhao, 2020) *preprint*	Association of Infected Probability of COVID-19 with Ventilation Rates in Confined Spaces: a Wells Riley Equation Based Investigation.	The Wells-Riley mathematical equation is applied to determine associations between infection probability and indoor ventilation rates. The authors report that less than 1% of the susceptible unmasked population would be infected in confined indoor spaces if the following ventilation rates and exposure periods are applied (100-350 m^3/h and 1200-4000 m^3/h for 15 minutes and 3 hours). If both the infected and susceptible individuals wear masks, the ventilation rate can be reduced to 50-180 m^3/h and 600-2000 m^3/h correspondingly. The authors state former rates would be easier to be achieved by normal ventilation models in typical office, classrooms, buses and aircraft cabin settings.
Commentaries		
(Melikov, Ai, & Markov, 2020)	Intermittent Occupancy Combined with Ventilation: An Efficient Strategy for the	Due to inherent limitations of most mechanical ventilation systems the fresh air flow supply cannot be increased to eliminate infection risk from expiratory airborne aerosols in indoor settings. As such, authors propose a source control

	Reduction of Airborne Transmission Indoors.	strategy based on intermittent breaks for room occupants (i.e. all occupants leaving the room periodically) and minimized room occupancy rates to maximize the effectiveness of indoor ventilation systems reducing airborne infectious pathogens.
(Morawska & Cao, 2020)	Airborne Transmission of SARS-CoV-2: The World Should Face the Reality.	Based on the available evidence, the authors conclude SARS-CoV-2 can likely be transmitted via airborne route. Therefore, all possible precautions against airborne transmission in indoor scenarios should be taken. Precautions include increased ventilation rate, using natural ventilation, avoiding air recirculation, avoiding staying in another person's direct air flow, and minimizing the number of people sharing the same environment. Of significance is maximizing natural ventilation in buildings that are or can be naturally ventilated ensuring that the ventilation rate is sufficiently high.
(Dietz et al., 2020)	2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission.	A review of the available evidence on the build environment that can be applied to the current COVID-19 pandemic. SARS-CoV-2 has been observed in aerosolized particles and droplets in a range of sizes, including 0.25 to 0.5 µm, which require high efficacy filtration for removal from shared indoor air. Residential and commercial ventilation systems with minimum efficiency reporting values (MERV) of 8 can only capture 70 to 85% of particles ranging from 3.0 to 10.0 µm (not sufficient for SARS-CoV-2 aerosols). Ventilation systems of MERV 13 or higher and HEPA filters commonly used in healthcare settings would effectively remove particle matter in the 0.25 to 0.5 µm size range. However, authors point to limitations within healthcare HVAC systems and filters arising from gaps at the edges of filters. Overall, the authors note that although higher ventilation rates, outdoor air fractions and higher grade filters can reduce and dilute air contaminants (i.e. infectious particles) within indoor air, the risk of airborne infection transmission is never fully eliminated.

Table 2: COVID-19 clusters primarily attributed to indoor ventilation

Reference	Publication Title	Key Outcomes
(Lu et al., 2020)	COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China.	Indoor ventilation air flow and droplet transmission at distances less than one meter are considered to be the primary modes of transmission for a cluster (n=10) attributed to an air conditioning unit at a dine-in restaurant. The only interaction for multiple cases in the cluster (Family B and Family C) with the index case (Family A) was sitting at neighbouring tables. In the table arrangement, the air outlet and the return air inlet for the central air conditioner were located above table of Family C, and all three tables were in line with the airflow for the same air conditioning unit. Droplet and aerosol infection transmission linked to air conditioning air flow is considered the mode of transmission between the three families.
(Yuguo Li et al., 2020) *preprint*	Evidence for Probable Aerosol Transmission of SARS-CoV-2 in a Poorly Ventilated Restaurant.	A thorough follow-up analysis of the restaurant outbreak by computer simulations and aerodynamic analysis concludes transmission to be consistent with a viral spread from poor ventilation, air flow zones created by the air condition unit, and index case exhaled virus-laden respiratory particles.
(Almilaji & Thomas, 2020) *preprint*	Air Recirculation Role in the Infection with COVID-19, Lessons Learned from Diamond Princess Cruise Ship.	Based on the analysis of clinical data from cruise ship passengers, symptomatic infections diagnosed after the initiation of quarantine was the same in cabins with and without an infected person. The authors' conclude airborne transmission of SARS-CoV-2 through the ventilation system of the cruise ship could explain infection rates observed during the quarantine period.
(Xu et al., 2020) *preprint*	Transmission Routes of COVID-19 Virus in the Diamond Princess Cruise Ship.	Analysis of passenger and COVID-19 case data (n=343) from the Diamond Princess cruise ship cluster, considered the HVAC and sewage systems of the ship and the epidemiological risk factors of each case and close contact to explore the most plausible modes of transmission. Based on the analyses the authors conclude the cruise ship's air condition (HVAC) system did not play a role in long-range airborne transmission of COVID-19 on the ship and that most passenger cases were likely exposed prior to the ship being quarantined.

(Shen et al., 2020) *preprint*	Airborne Transmission of COVID-19: Epidemiologic Evidence from Two Outbreak Investigation.	Airborne transmission by aerosols is assumed to be enhanced by fans and air conditioning units (re-circulating air) in shared transportation and indoor spaces and to have contributed to two independent COVID-19 outbreaks. One involving bus riders to and from a worship event (n=172), and another involving a three day conference workshop (n=30) where attendees shared indoor meeting space. In the worship, event outbreak COVID-19 infection risk among Bus #2 passengers was 41.5 (95% CI: 2.6–669.5) times higher compared to Bus #1 passengers and 11.4 (95% CI: 5.1–25.4) times higher compared to all other individuals attending the worship event. The overall attack rate from the conference outbreak was 48.3%.

Table 3: Grey literature on COVID-19 transmission and HVAC systems

Reference	**Organization**	**Key statements**
(ASHRAE, 2020) Accessed here	American Society of Heating, Refrigerating, and Air-Conditioning Engineers	ASHRAE Position Document on Infectious Aerosols released in April 2020. Transmission of SARS-CoV-2 through the air is sufficiently likely and airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating and air conditioning systems can reduce airborne exposures. Ventilation and filtration provided by HVAC systems can reduce airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air.
(CSA Group, 2020) Accessed here	CSA Group	HVAC equipment (intended for healthcare settings) testing and certification standards for manufacturers. Standard CSA Z317.2:19: Special requirements for HVAC systems in health care facilities Standard CAN/CSA-Z317.13-17: Infection control during construction, renovation, and maintenance of health care facilities, among others.

(CDC, 2020) Accessed here	Center for Disease Control and Prevention	Expert guidance on preparations and reopening businesses reference ASHRAE statement on HVAC systems, and HVAC start up guide. The guidance alludes to ensuring HVAC systems are operating properly. Increasing circulation of outdoor air by opening windows and doors after assessing the risks of outdoor air to occupants. Additional recommendations outlined in the documents include: increasing airflow supply to occupied spaces, disabling demand-control ventilation controls that reduce air supply based on temperature or occupancy, using natural ventilation, improving central air filtration, running the ventilation system during unoccupied times, generating clean-to-less-clean air movement, considering using portable high-efficiency particulate air (HEPA) fan/filtration systems, ensuring exhaust fans in restroom facilities are functional and operating, and considering using ultraviolet germicidal irradiation as a supplement.
(ECDC, 2020) Accessed here	European Center for Disease Prevention and Control	Guidance on heating, ventilation and air-conditioning systems in the context of COVID-19. The document covers maintenance, avoidance of recirculation, fan direction, and air exchange rate.
(AHS, 2020) Accessed here	Alberta Health Services	Rapid Evidence Report Outlines the available evidence and grey literature on COVID-19 transmission and HVAC systems in healthcare and non-healthcare settings, up to May 11, 2020. The key findings from the evidence review state HVAC system factors may contribute to pathogen transmission, especially when HVAC systems are not operating properly. The exact potential of HVAC systems to contribute to SARS-CoV-2 infection transmission could not be assessed due to limited evidence on viable virus in air samples, variability in HVAC systems, and complexities in transmission modalities. The Reviewer Committee recommend a committee with the necessary expertise be established to explore the role of

		HVAC systems in the transmission of viral pathogens including SARS CoV-2.

Table 4: Other Infection transmission (not SARS-CoV-2) and HVAC systems

Reference	**Publication Title**	**Key Outcomes**
(Wong et al., 2004)	Cluster of SARS Among Medical Students Exposed to Single Patient, Hong Kong.	SARS outbreak at a Hong Kong hospital isolation ward, among healthcare workers is described. Epidemiological data of exposed healthcare workers, an inspection of the ventilation system, and computational fluid dynamic analysis find index patient's cubicle had the highest supply flow rate, while the adjacent exhaust grille had the lowest flow rate among all four functional exhaust grilles in the ward. The authors discuss the possibility of aerosol transmission from the index patient via the ventilation system.
(Y Li et al., 2005)	Role of Air Distribution in SARS Transmission During the Largest Nosocomial Outbreak in Hong Kong.	A second retrospective analysis of in-patient cases and healthcare worker cases from the above SARS hospital outbreak is detailed. On-site inspections, measurements of the ventilation design and air distribution, and computational fluid dynamics simulations conclude airflow rate imbalances and non-functional HVAC system components (e.g. supply diffusers and exhaust grilles) to have contributed to infection transmission. The analysis revealed the need for improved ventilation and air-conditioning systems in the isolation ward to effectively reduce the risk of infection spread between patients and health care workers.
(Satheesan et al., 2020)	A Numerical Study of Ventilation Strategies for Infection Risk Mitigation in General Inpatient Wards.	Simulations are applied to examine the transport mechanisms and deposition patterns of MERS-CoV within a general ward. The authors concluded that air change and exhaust airflow rates had significant impacts on airflow and particle distribution.

		Within the mechanically vented space, exhaust grilles near a patient (ideally above each patient's bed), and high exhaust airflow rates are recommended to reduce transmission.
(Haselbach et al., 2009)	Airborne Transmission via HVAC of Acute Respiratory Infections in Military Facilities? Review of a Basic Training Cohort Study.	Examination of acute respiratory infections among military recruits living in military barracks, while considering HVAC system configurations and the sum of occupants from multiple zones that share return air mixed within the same HVAC system and redistributed as supply (termed contact population). The study found significant risk of airborne ARI transmission through HVAC systems. Higher rates of infection were found in the systems with both higher HVAC contact populations and less access to windows allowing for outside ventilation and air supply.
(Sundell et al., 2011)	Ventilation Rates and Health: Multidisciplinary Review of the Scientific Literature.	A multidisciplinary review team explore the evidence (published up to 2005) linking ventilation rate to multiple health endpoints. The evidence show biological plausibility for an association of health outcomes with ventilation rates, but does not provide clear evidence on particular agent(s) or infectious loads.
(Y. Li et al., 2007)	Role of Ventilation in Airborne Transmission of Infectious Agents in the Built Environment - a Multidisciplinary Systematic Review.	Review of literature published between 1960 and 2005 identified ten articles linking infection transmission to HVAC systems. The reviewers conclude there is strong and sufficient evidence to demonstrate an association between ventilation, air movements in buildings and the transmission/spread of infectious diseases such as measles, tuberculosis, chickenpox, influenza, smallpox and SARS. However, there was insufficient data to specify and quantify the minimum ventilation requirements in hospitals, schools, offices, homes and isolation rooms in relation to spread of infectious diseases via the airborne route.

Methods:

A daily scan of the literature (published and pre-published) is conducted by the Emerging Science Group, PHAC. The scan has compiled COVID-19 literature since the beginning of the outbreak and is updated daily. Searches to retrieve relevant COVID-19 literature are conducted in Pubmed, Scopus, BioRxiv, MedRxiv, ArXiv, SSRN, Research Square and cross-referenced with the literature on the WHO COVID literature list, and COVID-19 information centers run by Lancet, BMJ, Elsevier and Wiley. The daily summary and full scan results are maintained in a Refworks database and an Excel list that can be searched. Targeted keyword searching is conducted within these databases to identify relevant citations on COVID-19 and SARS-CoV-2. Search terms included in this review were (indoor and air), ventilation, HVAC, air conditioning. Each potentially relevant reference was examined to confirm it relevance data and relevant data was extracted. This review contains COVID-19 research published up to August 13, 2020. Relevant literature predating COVID-19 was identified by examining the reference lists of the relevant reviews and papers included in this summary.

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3

Public Health Agency of Canada document form March 12, 2021 discussing all the studies and reports that indicate Covid is spread by airborne transmission and additional evidence to show that Covid could linger in the air and spread to others over long distances.

Source:
https://www.dropbox.com/sh/j1ht46ckc3njymp/AAD2Vuz7_vP8FdOEeQnO-QNqa?dl=0

Public Health Agency of Canada
Agence de la santé publique du Canada

March 12, 2021

Emerging Evidence on COVID-19

Rapid Review on SARS-CoV-2 Aerosol Transmission, Update 2

Introduction

What is the emerging cluster/outbreak, experimental and biological evidence implicating aerosol transmission of SARS-CoV-2?

The scientific evidence and understanding of SARS-CoV-2 modes of transmission has rapidly evolved over the past year. Expelled respiratory particles containing infectious pathogens can occur in a continuum of sizes, and smaller respiratory particles (often termed aerosols) can remain suspended in air and disperse further distances than large respiratory droplets. Other pathogens that are known to primarily transmit through large droplets (e.g., Influenza, SARS-CoV-1, streptococcus pneumonia, and *Legionella*) can also spread by aerosols in some settings and conditions (1-6). As such, a range of evidence has been produced to describe the characteristics and relative importance of aerosols in SARS-CoV-2 transmission in different settings and conditions.

This evidence brief summarizes the scientific literature providing evidence on SARS-CoV-2 aerosol transmission published up to March 12, 2021 and is organized into the follow evidence sections:

1) SARS-CoV-2 cluster or outbreak investigations that have implicated aerosol transmission;
2) Experiments on indirect transmission of SARS-CoV-2 virus using animal models;
3) Experimental evidence on SARS-CoV-2 virus stability and viability in aerosols;
4) Biological monitoring studies on SARS-CoV-2 RNA in exhaled breath; and
5) Biological monitoring studies on SARS-CoV-2 RNA and viability in environmental air samples in patient care and in community (i.e., non-hospital/patient care) settings.

The evidence section on fluid dynamic simulations and *in-silico* analyses has been omitted from this update given the increasing amount of empirical evidence supporting the potential for SARS-CoV-2 aerosol transmission.

What's New

- This update identified 46 new studies, pre-published and published, between November 6, 2020 (the last update date) and March 12, 2021 on SARS-CoV-2 aerosol transmission potential. These studies are summarized below and identified as *new* throughout the evidence tables.
- The update includes twelve new reports of SARS-CoV-2 outbreaks/cluster investigations in real-world settings (Table 1). These aerosol implicated transmission events were reported to have occurred inside a post-travel quarantine hotel, nursing home, hospital hematology unit,

passenger bus, a restaurant, fitness facilities, department store, and apartments arranged in a vertical line in an apartment building (7-16). In these reports, most reported mask use was infrequent or improper at the time of assumed aerosol transmission, and index cases were reported to be at pre-symptomatic or early symptomatic stages of infection.

- Two new animal model-based experiments reported on multiple modes of SARS-CoV-2 transmission, including aerosols, between infected and susceptible hamster pairs (17, 18). One study suggested aerosol exposure led to earlier virus replication, shedding in respiratory tissue, and more acute disease manifestation in hamsters, when compared to fomite and intranasal exposures (17). The other study found aerosols from naïve infected hamsters can infect previously infected hamsters, which suggests recovery from a primary SARS-CoV-2 infection does not eliminate subsequent infection risk by aerosols (18).
- A newly included experimental study investigating the viability and decay rates of SARS-CoV-2 virus in aerosols reported the infectiousness of virus in aerosols to be highly dependent on environmental conditions in the following order of influence: simulated sunlight exposure levels (midday summer, spring midday, indoor/night tested) >temperature (10-40 °C tested)> humidity (20-70% tested) (19). A 90% reduction in infectious virus was estimated to take 4.8 minutes (at 40°C, 20% relative humidity) with midday summer sunlight exposure, with similar reductions estimated to take more than 2 hours (at 40°C, 20% relative humidity) under no sunlight exposure conditions (i.e., indoors or at night). Sunlight had the largest influence on decay rate, however higher decay was also noted at 30°C with high (70%) humidity or at 40°C regardless of humidity.
- One new biological monitoring study on exhaled breath samples from five patients found viral RNA to only be detected in exhaled air samples of COVID-19 patients with positive oropharyngeal, nasopharyngeal, and/or salivary swabs at the time of sampling (20).
- Twenty-eight new biological monitoring studies that investigated SARS-CoV-2 virus contamination in environmental air samples in patient care (includes hospitals and long-term care studies) and in community (i.e., non- patient care) settings are included in this update.
    - Two Canadian studies suggested viral RNA contamination in environmental air samples from a hospital (~ 3 meters from COVID-19 patients) and on no touch surfaces from long-term care home settings (21, 22) to indicate SARS-CoV-2 can spread through aerosols.
    - A new study confirmed the presence of viable virus in air samples collected from a car driven by a mildly symptomatic individual (23). This highlights SARS-CoV-2 virus can be expelled in to the surrounding air, even by a mild case over a short period of time (23).
    - Another study compares environmental air samples collected from inpatient hospital rooms and quarantine households with active cases (24). The household environmental air samples were estimated to be approximately eight times (OR 8.75 [95% CI 1.21-63.43; p=0.058]) more likely to be contaminated with viral RNA than hospital air samples. Based on these study findings the investigators suggest differences in air exchanges and

ventilation to be a key difference that is more important than disease acuity, with respect to environmental air contamination.

Key Points

- In total, 84 studies on the potential for aerosol transmission have now been identified in the published and pre-published literature. Multiple outbreak and cluster investigations suggest aerosol transmission of SARS-CoV-2 may have occurred in some settings. Emerging experimental evidence in separated animals indicates infection can spread from aerosol exposure, and infectious virus can remain stable and viable within suspended aerosols. Biological monitoring studies confirm the presence of viral RNA in exhaled breath and environmental air samples. Clinical evidence informed systematic review and meta-analysis estimates of viable respiratory virus emission of SARS-CoV-2.
- Twenty-six investigations of twenty different COVID-19 outbreaks/clusters in different real-world settings (e.g., nursing home, hospital hematology unit, post-travel quarantine hotel/facility, meat processing plants, indoor choir practice, restaurant, cruise ship, passenger bus, fitness facilities, high-rise apartment building and shopping mall), have implicated aerosol transmission among cases (Table 1). The outbreak investigations suggest aerosol transmission is amplified and/or more likely to occur in some settings and under some conditions such as poorly ventilated or crowded indoor spaces, presence of early symptomatic or pre-symptomatic cases, or when individuals are engaged in physically exertive activities (e.g., singing, fitness classes).
- A systematic review and meta-analysis of clinical estimates found the likelihood of viable virus in respiratory aerosols expelled by an individual at peak viral load to be 61.1% (95% CI: 51.8-70.4%), and the likelihood estimates to be substantially lower at ≤ 0.69% (95% CI: 0.43-0.95%) for an individual with a mean viral load Peak viral load was estimated to happen between 1 day before symptom onset to 5 days post symptom onset (Table 7). This is consistent with the findings across outbreaks where the index case was usually pre-symptomatic or very early in their symptomatic illness when transmission occurred.
- Animal studies provide evidence on infection by aerosols, and infection transmission even when infected and susceptible animals are separated by cage setup or barriers. This indirect infection transmission is at least partially attributed to aerosols and air flow by the study investigators (Table 2).
- Three studies report on aerosol virus stability and viability, as well as the influence of environmental factors (e.g., temperature, humidity and sunlight exposure) on virus persistence in aerosols (Table 3). Experimental evidence has demonstrated prolonged viability of SARS-CoV-2 virus within laboratory aerosols for up to several hours (range 2 to 16 hours).
- Biomonitoring studies measure viral RNA in exhaled breath samples of infected individuals (Table 4) and environmental air from patient care and community settings (Table 5 and Table 6). The increasing number of studies that confirm the presence of SARS-CoV-2 in environmental air provide

additional evidence to support aerosol transmission in community settings. The few studies that confirmed virus viability in cell culture reported collecting environmental air samples near (<2 meters) infected individuals (Table 5 and Table 6).

Overview of the Evidence

The available body of evidence on the potential transmission of SARS-CoV-2 by aerosols in the published and pre-published literature is rapidly evolving. This review includes studies (n=84) accessed up to March 12, 2021 and deemed relevant by a single reviewer. The overall quality of the evidence reviewed is broadly described below for each section of presented evidence based on study design, quantity, and consistency of the presented data. Briefly, the hierarchy of evidence and general quality ratings consider well-conducted randomized controlled trials to be high quality due to their low risk of bias. Other experimental designs may be considered moderate quality, but may also be downgraded due to power or conduct issues. Experiments using animal models are considered low quality evidence. Observational studies are generally considered to be at high risk of bias and thus low quality, however some large, well-conducted, prospective cohort studies may be assessed to be of moderate or low risk of bias, and thus may be considered moderate to high quality.

There are 26 outbreak/cluster investigation studies focusing on 20 different human outbreaks that suggest aerosol transmission of SARS-CoV-2 (Table 1). These are retrospective observational studies that are at risk of numerous biases. The retrospective nature of these investigations and the lack of genotyping data on the majority of identified cases mean that inferences about aerosol transmission are limited to epidemiological linkages. Multiple cluster investigations include both a description of the investigation as well as *in silico* simulations that explore the potential for aerosol transmission in real world settings.

Animal models provide experimental evidence on infection by aerosol exposure, by assessing indirect transmission from infected to susceptible animals by either passive or directed air flow, when separated using a variety of cage and barrier setups (Table 2). These studies did not provide sufficient details about the symptoms and behaviors of the infected animals (e.g., sneezing and respiratory fluid transfer by sniffing/licking barriers) or the experimental setup to rule out infection transmission by contact with respiratory and oral fluids in most experiments. Overall, animal models of transmission offer the lowest quality of evidence for aerosol transmission.

Three experimental studies provide evidence confirming the stability and viability of infectious virus in artificially generated and suspended aerosols (Table 3). Although these studies provide robust evidence that supports the longevity of infectious virus in laboratory environments for as much as 16 hours, the extension of these findings to real-world settings by biological monitoring studies remains largely unestablished.

The majority of identified biological monitoring studies looked for SARS-CoV-2 viral RNA in exhaled breath (Table 4) and environmental air samples in different settings (Table 5 and Table 6). These provide moderate quality evidence that viral RNA can either travel or linger in air at some distance from an infected individual in some settings and conditions. There is limited reporting of information on virus concentration in positive samples, sampling distance from infected individuals, and whether or not there was virus viability documented by cell culture. The lack of these details limit the generalizability of biological monitoring evidence to all indoor settings and all infected individuals, and hinder the identification of settings and conditions that lead to increased concentration of viable virus from exhaled breath and aerosolized particles in the air. Furthermore, it is likely the large range of sample collection settings (e.g., patient care vs. community settings) and techniques (e.g., exhaled breath vs. exhaled breath condensate) may have influenced the sensitivity of viral RNA quantification and viable virus detection tests, applied in biological monitoring samples. Additional research is needed to confirm the infectiousness and viability of SARS-CoV-2 within air samples to know where and when the risk of aerosol transmission of SARS-CoV-2 becomes more likely.

This review summarizes the evidence on aerosol transmission of SARS-CoV-2 and characterizes the settings and/or conditions that have been studied. Additional evidence is needed to address knowledge gaps on aerosol transmission of SARS-CoV-2:

1) Quantifying the infectious dose of SARS-CoV-2;

2) The case attributes and environmental conditions under which viable virus is likely to be present in exhaled breath, remain suspended and be circulated in environmental air;

3) Genomic data from cluster and outbreak investigations suggesting indirect SARS-CoV-2 infection transmission in humans;

4) Confirmation of the relatedness of cases by genotyping data, and better quality data supporting aerosol transmission in the implicated outbreaks/clusters; and

5) Formal review of fluid dynamic literature from experts in this field that best outline the environmental conditions and behavioral activities that increase (or decrease) respiratory aerosol release and infection transmission, as well as quantify aerosol transmission risk estimates.

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CLUSTER/OUTBREAK INVESTIGATIONS

This section provides a summary of twenty six studies describing twenty different COVID-19 cluster/outbreaks in real-world settings that epidemiologically support infection transmission by aerosols (Table 1). In a number of studies the same COVID-19 cluster/outbreaks were investigated by separate groups of investigators who all concluded aerosols or the long-range indirect transmission of virus to have played a role in infection spread among cases. These outbreaks have been organized according to the setting in which infection transmission was assumed to have occurred by the study investigators. The settings included a hematology unit at a hospital, a travel quarantine hotel, passenger buses, fitness classes and facilities, a meat processing plant, dine-in restaurants, a choir practice, a cruise ship, department stores, and different high-rise apartment buildings. The evidence includes epidemiological investigations, computational fluid dynamic analyses/simulations, video surveillance footage, or spatial analysis of cases during the transmission event.

Interestingly, multiple COVID-19 cluster/outbreaks were described to have occurred in settings similar to one another, which suggests these settings may be more favorable to aerosol transmission. Common attributes were closed spaces with minimal ventilation (i.e. few or no windows, insufficient ventilation and air circulation), presence of pre-symptomatic, early symptomatic index case(s), and the spread of virions beyond 2 meters enhanced by artificial air flow, ventilation systems, air ducts, drainage pipes or inefficient ventilation. Additionally, in some situations the infector and infectees were engaged in activities that typically increase exhalation rates (e.g., physical exercise, singing), or were in crowded spaces during the transmission events.

It is worth noting other than for one of the summarized studies, none reported on the genetic sequences of virus isolated from outbreak/cluster cases, and many studies do not describe mask use during the exposure events. These are important gaps within the existing evidence because genotyping data would confirm the relatedness of cases while mask use data would provide insights regarding the effectiveness of this prevention measure. The lack of this information within the summarized outbreak/cluster investigations is a key limitation of this evidence.

Table 1: SARS-CoV-2 cluster or outbreak investigations that have implicated aerosol transmission (n=26)

STUDY	METHOD	KEY OUTCOMES
Hospital hematology setting		
Saidel-Odes (2021) (25) Cluster Investigation Israel Sep – Oct 2020	Investigation of a COVID-19 outbreak linked to an index patient who was immunocompromised with multiple myeloma and underwent stem cell	Seven healthcare staff in the transplant unit housing the index patient were diagnosed with the infection; attack rate of 19% (n=7/37). The infected staff included 2 doctors, 4 nurses, and 1 housekeeping worker. Two of the positive staff did not report any direct contact with the index

new	transplant. Patient was treated in an AIIR following COVID-19 diagnosis, and healthcare staff donned appropriate PPE (i.e., N95, face shield, gown and gloves) prior to entering the patient's isolation room. All staff in the unit wore gowns, gloves and masks.	patient. The outbreak investigation and univariate analysis found infected healthcare workers were more likely to have reported spending time in the unit's corridor or nurses' station ([RR], R = 7.2; 95% CI, 1.22–42.49; *P* = .018), but not in the index patient's room. The investigators suggest aerosol transmission to be the only plausible explanation for this outbreak.
Hotel quarantine and airplane setting		
Eichler (2021) (14) Cluster Investigation New Zealand Sep 2020 *new*	Investigation of a COVID-19 outbreak that occurred during repatriation, at a mandatory isolation and quarantine facility (hotel) and among household contacts in the community. Cases who were returning from other countries were required to complete a mandatory quarantine and isolation at a facility for 14 days after landing at their destination.	Based on the application of video surveillance data and viral genomic analysis of cluster cases, the investigators suggest multiple transmission chains. The suspected sites of transmission were international and domestic flights, the quarantine facility, and households. While aerosol transmission may have been the mode in each transmission event, but an in-depth investigation concluded aerosol transmission was the primary mode of infection transmission at the hotel quarantine facility The case exposures/transmissions in the outbreak are assumed to be as follows: - 2 index cases infected around the time of repatriation travel from India to Christchurch, NZ. 1 exposed on the flight to Christchurch, 2 exposed in hallway at the quarantine facility (by aerosols see below), 1 exposed on the flight from Christchurch to Auckland (transmission from the 2 aerosol exposed cases who tested negative on day 12 of quarantine), with additional cases among household contacts of the last three cases. Based on computer footage the investigators concluded aerosol transmission to have taken place at the doorway of two different hotel rooms

		that housed individuals in quarantine by suspended aerosols. Transmission was assumed to have occurred during a 50-second window between closing the door to the room of one case and opening the door to the room of other cases. Note: A review of the hotel's ventilation system found the rooms in question had a net positive pressure compared with the corridor so air flow into the corridor when the door was open was likely.
Nursing home setting		
de Man (2020) (15) LTE Cluster Investigation Netherlands Jun –Jul 2020 *new*	Investigation of a COVID-19 outbreak in a single ward of a 7 ward Dutch nursing home.	A total of 17/21 residents in the ward and 13/34 healthcare workers from the ward, and an additional 4 laboratory workers were confirmed cases linked to the cluster; attack rate among residents was 81% and among healthcare workers was 50%. All 106 healthcare workers and 95 residents of other wards remained negative for COVID-19. Healthcare workers wore facemasks during patient care and worked in designated wards to limit contacts. The outbreak was limited to a single ward (out of 7 wards in the facility) with a ventilation system that recirculated unfiltered air. The ventilation system was new and monitored CO2 concentrations to determine when to refresh the air with outside air. Viral RNA was detected in the ventilation system (air conditioners and ventilation cabinet dust filters). The investigators state transmission was likely the result of aerosol transmission in an inadequately ventilated setting/ward given the simultaneous detection of a large number of cases limited to one ward, and occurred during a time of low community transmission.
Transportation bus setting		
Luo (2020) (7)	Investigation of a COVID-19 outbreak linked to	A total of 12 cases were identified following the investigation of 243 individuals who were

Cluster Investigation China Jan 2020 *new*	multiple bus trips by the index case, in Hunan China.	epidemiologically linked to multiple bus trips taken by the index case, attack rate of 7.0%. The seated distance of the infected individuals during bus rides ranged from 1-4.5 meters from the index case. The 2.5 hour coach ride resulted in 8 cases and not all cases were clustered close to each other during the trip. Infection was also identified in an individual who sat (approximately) on the same seat as the index case, after the index case had existed the bus. 2 cases were identified from the 1 hour minibus trip. 2 cases were tertiary cases to one of those infected on the bus. None of the identified cases reported wearing face masks during bus rides. The investigators suggest aerosols traveling beyond 2 meters and air flow to have influenced infection transmission in the crowded and closed environment of these transportation buses.
Shen (2020) (26) Cluster Investigation China Jan 2020	A COVID-19 outbreak among 128 people driven to a worship event in Eastern China on two separate buses. Round trip was 100 minutes on the bus. Attack rates were measured for Bus 1 vs. Bus 2 that had the index case. Air conditioning systems of both buses were on recirculation mode. Spatial analysis of passenger seating was estimated.	None of the passengers on Bus 1 were infected, 24 of the 68 passengers on Bus 2 developed COVID-19. Passengers riding Bus 2 with the index case had an attack rate of 34.3% (95% CI, 24.1%-46.3%), compared to passengers on bus 1. Although sitting near bus windows and doors appeared to have had a protective effect on infection transmission, the authors conclude, the lack of a significant increase in infection risk between individuals sitting in high risk zones (i.e. closer to the index case) and low risk zones, and elevated attack rates among bus passengers riding with the index case, to be partially explained by aerosol transmission of infection.
Meat processing plant setting		
Guenther (2020) (27) *preprint*	Investigation of a super-spreader event among	The analysis of index cases (flatmates) and 18 co-worker cases suggest working the early morning

Cluster Investigation Germany Spring 2020*	meat processing plant workers that included: possible routes of transmission, spatial relationship between workers, climate/ventilation conditions, sharing of living quarters and transportation, and genetic typing of oropharyngeal swab samples.	shift (140 early shift workers) to be the common source of infection. Statistically significant infection rates were observed for workers working within an 8-meter radius of the suspect index case. Authors conclude indoor confined settings, demanding physical work, and the facility's environmental conditions (i.e. air being constantly re-circulated and cooled to 10°C, with low air exchange rates) all created conditions for aerosol transmission. Note: quantitative risk estimates were not provided.
Restaurant setting		
Kwon (2020) (8) Cluster Investigation Korea Jun 2020 *new*	Investigation of a cluster among 3 patrons at a restaurant. The investigation considered epidemiological data, television images, air flow patterns and cell phone location information.	The investigators concluded infection transmission occurred from an infected customer to two individuals at the restaurant venue, attack rate of 15.4% (2/13). Source and time of exposure was assumed to be one day prior to symptom onset in the index case. The assumed mode of transmission was aerosols that travelled greater than 6.5 meters via air conditioner air flow current inside the restaurant venue. The exposure time between the infector and the infected is reported to be approximately 5 minutes. Mask use is reported to have been improper among staff and patrons.
Lu (2020) (28) Cluster Investigation China Jan-Feb 2020	Investigation of a COVID-19 cluster among restaurant patrons. The investigation included a spatial analysis of restaurant table arrangement and where cases were seated.	An outbreak among 91 individuals at a restaurant, 83 had dined at 15 tables, and the remaining 8 individuals were staff. A single asymptomatic case led to 9 COVID-19 infections among diners from three families. None of the families had met previously and did not have any close contact during lunch. No additional cases were identified during the 14 days quarantine of the remaining diners.

		Spatial analysis of case tables during lunch (i.e., exposure event reveal) found the affected tables had been arranged in line with airflow from an air conditioning unit. Authors suggest infection transmission could not be explained by droplets alone, and aerosols travelling with air flow may have contributed to infection transmission.
Li (2020) (29) *In silico* study China Feb 2020 Note: Same outbreak described by Lu (2020).	An investigation and analysis of a COVID-19 cluster among 3 families who ate at the same restaurant. The analysis included: epidemiological data, spatial analysis of restaurant table arrangement, video surveillance data, and computer fluid dynamic and tracer gas simulations of event's fine droplet spread.	10 people from three different families seated at different tables were found to have been infected with SARS-CoV-2 following a Chinese New Year's Eve (January 24, 2020) lunch. None of the waiters or patrons at the remaining tables became infected. Ventilation rate was estimated to be 0.9L/s (0.75-1.04 L/s) per person. No close contact or fomite contact was observed among cases, aside from back-to-back sitting by some patrons. Using computer simulations the authors demonstrate infection distribution to be consistent with the spread pattern of exhaled virus aerosols. These results highlight transmission occurring in a crowded and poorly ventilated indoor situation.
Choir practice setting		
Charlotte (2020) (16) Cluster Investigation France Mar 2020 *new*	The investigation of a COVID-19 outbreak linked to a choir practice, in Whir au Val, France.	Twenty-seven participants (25 singers, 1 conductor and 1 accompanist) attended the indoor choir practice that took place in a non ventilated space of 45 m^2. No attendees reported being symptomatic in the 14 days prior to the practice date. 19/27 attendees developed COVID-19 infections at 1 to 12 days post practice date (median of 5.1 days). The secondary attack rate was 70% among all attendees. The investigators assume infection transmission occurred by aerosols from presymptomatic or

		asymptomatic individual(s) who attended the choir practice as the index case was not definitively identified.
Hamner (2020) (30) Cluster Investigation USA Mar 2020 Note: Same outbreak described by Miller (2020).	The investigation of a COVID-19 outbreak linked to a choir practice, in Skagit County, Washington. The practice lasted for 2.5h. During practice people were singing and seated 6-10 inches apart, socializing with communal snacks, and stacking chairs. None of the attendees reported physical contact.	Among the 61 choir members attending the practice, at least one singer was known to be a symptomatic COVID-19 case. The epidemiological investigation reported 53 cases (33 confirmed, 20 probable cases). Secondary attack rates were 53.3% among confirmed cases and 86.7% among all cases. The odds of infection were 125.7 (95% CI: 31.7-498.9) times greater among members who attended the March 10 practice (assumed exposure event). The investigators introduce the potential for aerosol emission and COVID-19 transmission during singing in the COVID-19 literature.
Miller (2020) (31) *In silico* study USA Mar 2020 Note: Same outbreak described by Hamner (2020).	Monte Carlo simulations and mathematical modeling were used to estimate aerosol emission rates in the outbreak linked to a choir practice, in Skagit County. The applied model assumes infection transmission during the outbreak was dominated by inhalation of respiratory aerosols in a well mixed indoor environment (i.e. the aerosols were evenly distributed in the air). The viral load emitted was expressed as quanta emission rate (quanta per hour^{-1}) where a quantum	*In silico* analysis supported aerosol transmission from respiratory aerosols based on assumption that high emission rates occurred given the high attack rate (53-87%), which was higher than would be expected if the transmission was due to fomites or large respiratory droplets. The model estimates the mean respiratory aerosol emission rate for a single infected case at the exposure event to be 970 [IQR 680-1190] quanta per hour^{-1}.

	was defined as the dose of aerosol droplet nuclei required to cause infection in 63% of susceptible persons.	
Multiple outbreaks		
Buonanno (2020) (32) *In silico* study China and US (sites of applied outbreaks) Feb-Mar 2020 Note: A different analysis of restaurant and choir practice outbreaks described above	This is an emission and exposure model that used a step-wise approach to quantify individual infection risk among susceptible subjects exposed to an asymptomatic/ mildly symptomatic case in choir practice and dine-in restaurant. Also used Monte Carlo method; individual infection risks were calculated as a function of quanta emission characteristics.	The model illustrated individual infection risk increased based on ventilation rates, activities and amount of virus exhaled. For instance, sedentary activities for 1 hour may have an infection risk of 2.1%, which can increase to 27% with higher emission rates. Based on risk assessment approach and available data, quanta emission rates were estimated to be 61 quanta/hour for the restaurant and 341 quanta/hour for the Skagit Valley choir practice. In both of the examples, varying the ventilation would not have achieved an individual risk <0.1. The authors concluded aerosol transmission represents the main route of transmission for both outbreaks.
Kriegel (2020) (33) *In silico* study Germany, China, USA, (sites of applied outbreaks) Feb-Mar 2020 Note: Included the following clusters: Meat Processing plant- Guenther (2020), Choir Practice- Hamner	An extension of the Wells-Riley equation was used to estimate predicted infection risk via aerosols in twelve published and unpublished COVID-19 outbreaks. Predicted infection risks were compared to observed attack rates in each event. To estimate a "credible interval" for model predicted infection risks, the quanta emission rate,	In nine out of the twelve outbreaks the observed attack rates were in range with the predicted infection risk via aerosols and the corresponding ranges (with the variation of the boundary conditions). Predicted Infection Risk via Aerosols (PIRA)/attack rate (AR) Meat processing plant: 25% (17-35)/ 26% Choir: 97% (88-99)/ 87% Restaurant: 40% (35-56)/ 45% Bus tour: 35% (19-58)/ 34%

(2020), Bus Passengers – Shen (2020), and Restaurant – Lu (2020)	the respiratory rate as well as the air volume flows were varied. The analysis assumes long range aerosol transmission in an ideally mixed environment.	The attack rates from all these outbreaks are reported to be in-line with estimated infection risk via aerosols.
Cruise ship settings		
Azimi (2021) (34) *In silico* study Cruise ship Jan-Feb 2020 Note: Same outbreak described by Almilaji (2020) and Xu (2020)	Analysis of case data from the Diamond Princess cruise ship outbreak. Applied a framework based on stochastic Markov chain and negative exponential dose-response modeling with empirical data, to inform a modified version of the Reed-Frost epidemic model, to predict case count rates. Assumed infected individuals could be infectious upto 1 day post incubation period, effective incubation periods were estimated to be 5-11/13 days, and considered different modes of transmission. Note: Case data from early 2020 were included in the analysis.	712 COVID-19 cases were identified in 3711 passengers and crew members, yielding an attack rate of 19%. Key estimates derived from the model included - short-range droplets and aerosols (35%), long-range aerosols (35%), and fomite (30%) as modes of infection transmission - large respiratory droplets (41%) and small respiratory aerosols (59%) as source of infectious virus - Case transmission proportions prior to and after the passenger quarantine was 58% (±5% SD) and 42% (±5% SD), respectively. T - Effective reproduction number before and after the quarantine period was 3.8 (±0.9 SD) and 0.1 (±0.2 SD). Based on the modeled estimates the authors concludes smaller respiratory aerosols contributed to a greater proportion to infection transmission aboard the cruise ship, on average, across all time periods (i.e., both before and after passenger quarantine). It was estimated that aerosol transmission was the dominant mode of transmission (>70% of cases) despite the high ventilation rates (9-12 air changes per hour) with no air recirculation in the cruise ship.
Almilaji (2020) (35)	Analysis of clinical and case count data from	Infection rates among passengers in cabins without previously confirmed cases was 1.2%,

Cluster Investigation Cruise ship Jan-Feb 2020 Note: Same outbreak described by Azimi (2020) and Xu (2020)	Diamond Princess cruise ship outbreak. Post quarantine symptomatic infection onset rates (SIRR) among lab confirmed cases were examined and the design of the cruise ship's air conditioning system was considered. Note: Case data up to February 20, 2020 were included in the analysis, and a median 5 day incubation period was assumed.	which was higher than rates among passengers in cabins with previously confirmed cases 0.8%. Based on this difference, the authors suggest airborne transmission of SARS-CoV-2 through the cruise ship's ventilation system may have contributed to the outbreak, and explain the higher infection rates in cabins without previously confirmed cases.
Xu (2020) (36) *preprint* Cluster Investigation Cruise ship Jan-Feb 2020 Note: Same outbreaks described by Azimi (2020) and Almilaji (2020).	Analysis of COVID-19 case data from the Diamond Princess cruise ship outbreak was analyzed based on individual risk factors, stateroom occupancy and the air conditioning (i.e. HVAC) system of the ship to explore the most plausible modes of transmission. Case data from January 20 to February 18, 2020 were included in this analysis.	Daily infection rates for passenger cases (n=146) were predicted based on close contact vs. non-close contact status, and pre- and post-quarantine data (February 5 was the start of quarantine). The investigators concluded most passenger cases were likely exposed before the passengers were quarantined and the cruise ship's air conditioning system did not play a role in long-range aerosol transmission of COVID-19.
Fitness/sports facility settings		
Groves (2021) (9) Cluster Investigation US Jun 2020	Investigation of a COVID-19 outbreak associated with multiple exposure events in Hawaii between a stationary cycling class instructor, a kick	20 cases were linked to two pre-symptomatic fitness instructors, at different fitness classes. The kick boxing/personal training instructor was a secondary case of the stationary cycling class instructor.

new	boxing/personal training instructor and their clients. Note: The average community transmission rate at the time of the outbreak was 2–3 cases per 100,000 persons per day, which suggests alternative exposures were unlikely.	The index instructor wore a face mask during the stationary bike class but the participants did not. The instructor was > 6 feet away and facing participants during the class. The room windows and doors were closed and floor fans (for cooling) directed air at participants. The transmission events with the second instructor are assumed to have occurred during small group kick boxing and personal training sessions when the instructor did not wear a mask and mask use was minimal among participants. Both instructors taught classes prior to symptom onset and the following aggregate attack rates for were calculated: - <1 day pre symptom onset (attack rate 95%) - 1 to <2 days pre symptom onset (attack rate 13%) - ≥2 days pre symptom onset (attack rate 0%) The outbreak investigators suggest infection transmission to have been facilitated by the lack of face mask use, extended close contact, poor room ventilation, and aerosol emission during physical activity and loud speech.
Lendacki (2021) (10) Cluster Investigation US Aug-Sep 2020 *new*	Investigation of a COVID-19 outbreak associated with indoor fitness classes that were conducted at ≤25% capacity (i.e., 10–15 persons) with participants ≥6 ft apart. Note: the building was not originally designed for exercise classes and the	55 COVID-19 cases (49 confirmed and 6 probable cases) were identified among 81 individuals who participated in indoor high-intensity exercise classes, attack rate of 68%. Mask use during the exercise sessions was reported to have been infrequent and approximately 75%. Outbreak was attributed to 2 index cases who attended multiple exercise classes when symptomatic and potentially infectious. Both attendees reported mask use ≤60% of the time in class (infrequent mask use). The odds of infrequent mask use compared to consistent mask use during classes was more

	buildings ventilation system was not assessed.	common among attendees with COVID-19 than attendees not diagnosed with COVID-19 (odds ratio [OR] = 3.5; 95% CI = 0.9–15.1). Attendees diagnosed with COVID-19 also reported attending more exercise classes (median of 5 vs. 3 classes) The authors suggest infrequent mask use, increased respiratory exertion during exercise, aerosol transmission, and sub-optimal ventilation may have contributed to infection transmission in this outbreak.
Jang (2020) (37) Cluster Investigation South Korea Feb-Mar 2020	Investigation of a COVID-19 outbreak associated with Zumba classes at 12 different fitness sports facility locations following an instructor workshop in Cheonan, South Korea.	The initial transmission event is assumed to have occurred among instructors at a 4-hour workshop where 8 of the 27 attendees tested positive for SARS-CoV-2. In the following weeks case counts associated with infected instructors grew to 112 cases across multiple fitness facilities. The workshop attack rate was 26.3% (95% CI 20.9%–32.5%) and the secondary attack rate from 8 instructors was 4.10% (95% CI 2.95%–5.67%, 830 close contacts). The investigators state approximately half of identified cases (50.9%) were due to transmission from instructors to fitness class participants; 38 cases (33.9%) were in-family transmission from instructors and students; and 17 cases (15.2%) were from transmission during meetings with coworkers or acquaintances. No secondary cases were observed among Pilates and yoga class students, led by an infected instructor. Authors state intense physical activity, large number of participants in a fitness class (i.e. crowded space), and the moist warm atmosphere of the sports facility may have contributed to high rates of infection in the outbreak.

Brlek (2020) (38) Cluster Investigation Slovenia Feb-Mar 2020	Investigation of a COVID-19 cluster linked to a squash court in a fitness facility.	The cluster involved 6 cases assumed to be linked through indirect transmission of infection. Epidemiological investigation indicated the index case developed symptoms during the game of squash, and four confirmed and one suspect case were linked to the same squash hall and potentially the same change rooms. None of the cases shared sports equipment or had contact with the facility staff. No additional cases were identified. Authors suggest the infection transmission within the cluster likely occurred due to aerosolization of virus in the indoor setting including small confined space, inadequate ventilation and strenuous physical activity.
Apartment building settings		
Hwang (2021) (11) Cluster Investigation South Korea Aug 2020 *new*	Investigated the role of aerosol transmission in a COVID-19 outbreak associated with an apartment building in Seoul.	10 COVID-19 cases in 7 households were identified along two vertical lines of apartments in a building, each line of apartments were connected through a single air duct in the bathroom for natural ventilation. Attack rate of 2% among the apartment building residents (n=10/437). None of the tested surfaces, including household ventilation grills and drains were positive for viral RNA. Transmission through droplets when occupying the same common space (e.g., an elevator) was assumed to have been unlikely due to the spatial arrangement of case apartments. The outbreak investigators assume vertical air flow through a single air duct in the bathroom (consistent with air flow in a vertical shaft) to have spread the infection to upstairs and downstairs apartment residents in the building.

Lin (2021) (12) Cluster Investigation China Jan – Feb 2020 *new* Note: A different analysis of the cluster described by Kang (2020).	Investigation of a COVID-19 cluster linked to families living in three vertically aligned units of the same apartment building. The index family reported possible travel related exposure in Wuhan, but the two other families with subsequent cases did not. Tracer gas was used to simulate air flow among units.	10 COVID-19 cases were identified in 3 households, phylogenetic analysis confirmed all cases were infected by the same strain. Video surveillance footage did not identify exposures between the index household members and other cases. Investigators conclude infection transmission to have likely occurred through drain pipes connected to the toilet which were connected to sewer pipes and flood drains, a system that was shared by the vertically aligned apartments.
Kang 2020 (39) Cluster Investigation China Jan – Feb 2020 *new* Note: A different analysis of the cluster described by Lin (2021).	Investigate infection transmission among three families living in the same apartment building. The index family reported possible travel related exposure in Wuhan, but the two other families with subsequent cases did not. Investigators used Ethane tracer gas as a surrogate for gas in the buildings drainage system and computational fluid dynamics to investigate possible sources of infection and transmission among families.	10 COVID-19 cases among three families who lived in vertically aligned apartments connected by drainage pipes in the master bathrooms. Attack rate of 4% among apartment building residents and staff (n=10/217) No exposure from the building's elevators were identified, and viral RNA was not detected on elevator buttons or air vent surfaces. The surfaces most frequently contaminated with viral RNA were in the master bathrooms, suggesting these areas to be probable infection transmission sites. Based on the epidemiological and *in-silico* analyses the investigators conclude infection transmission from the index family to the other two families likely occurred through fecal aerosols traveling within vertical drainage stacks of the apartment building. Note: none of the collected air samples from this setting were positive for viral RNA.
Shopping malls/stores		
Jiang (2020) (13) Cluster Investigation	Investigation of 43 SARS-CoV-2 cases linked to a cluster at a department store in Baodi, China.	43 COVID-19 cases linked to the outbreak at a department store: 6 salespersons, 18 customers, and 19 of their close contacts. The close contact

China Jan – Feb 2020 *new*	Epidemiological data, video surveillance footage, store layout and ventilation conditions were considered in the investigation.	cases were determined to have been secondary cases without exposure to the department store. The investigators conclude aerosols to have been a significant mode of transmission among 11 cases of the outbreak. The index case was not identified but it was assumed to have been one of the infected salespersons.
Cai 2020 (40) Cluster Investigation China Jan 2020	Investigation of a SARS-CoV-2 cluster linked to a shopping mall. Clinical, epidemiological and laboratory (RT-PCR) data of cases was analyzed to assess possible modes of infection transmission.	Two shopping mall co-workers were the index cases: this was associated with 7 infections among co-workers on the same floor, 7 mall staff from other floors, 10 mall shoppers, and 2 close case contacts outside of the mall. Shoppers and co-workers from other floors denied close contact with the index cases. Based on the available data the authors suggest infection spread could have resulted from spread via fomites or virus aerosolization in a confined public space (e.g. restrooms or elevators).

LTE= letter to the editor

ANIMAL EXPERIMENTS ON AEROSOL EXPOSURE AND TRANSMISSION OF SARS-COV-2

This section summarizes the six identified animal model studies that provided experimental evidence supporting aerosol transmission of SARS-CoV-2 (Table 2). The animal models used in the studies were non-human primates, ferrets and hamsters, all of which have been established as suitable animal models for the study of SARS-CoV-2 transmission in humans (41, 42)

Two experiments involved the controlled exposure of non-human primates and hamsters to artificially generated infectious aerosols at different virus concentrations to determine if infection can occur and to follow the clinical course of the infected host animals (17, 43). These studies provide evidence that SARS-CoV-2 infection can occur from exposure to infectious aerosols in a controlled setting. One of the studies in hamsters, that compared multiple modes of transmission (i.e., aerosol, fomite and intranasal) reported virus replication and shedding in the animals to be linked to the type of exposure. The authors observed earlier viral replication, higher viral loads, acute manifestation of respiratory symptoms, and different viral shedding patterns in the respiratory tissue of animals infected through aerosols compared to animals infected by intranasal and fomites mode of exposure (17).

Five experiments investigated SARS-CoV-2 transmission between infected and susceptible host animals (i.e., transmission pairs) that were physically separated by different barriers and cage setups (17, 18, 44-46). In most experiments, transmission pairs were separated by barriers that prevented direct contact but allowed for air flow. This led to 25-100% of the susceptible animals becoming infected after some duration of exposure. These experiments provide evidence supporting aerosol transmission among host animals in experimental settings.

Additional evidence from two experiments demonstrate how air flow and ventilation can impact indirect transmission of infection (17, 45). In one of these experiments transmission pairs of ferrets were housed in physically separated cages but shared air through connected air ducts, which led to 50% of the susceptible animals becoming infected (45). In another experiment the influence of air flow direction on likelihood of infection transmission was investigated, and results show infection only occurred in the susceptible hamster housed downwind from the infected hamster (17).

The small sample sizes, animals not being separated by large distances, the lack of details on animal behavior during the experiment (e.g., coughing or sneezing symptoms in infected animals), and at times the lack of detail regarding the permeability of separation barriers to respiratory and oral fluids, fecal and food particle movement, limit this evidence from completely supporting aerosol transmission.

Table 2: Animal experiments on aerosol exposure and indirect transmission of SARS-CoV-2 (n=6)

STUDY	METHOD	KEY OUTCOMES
Edwards (2020) (43) *In Vivo Study* USA Oct 2020*	Eight non-human primates Macaca mulatta (rhesus macaque) and Chlorocebus aethiops (African green monkey)) were infected with aerosols (≈2 µm) containing SARS-CoV-2 (~2.5x10^3 TCID50) using a laboratory inhalation system	Mucosal sampling by nasal swabs showed viral RNA detected as early as +1 day post infectious aerosol exposure with viral titers reaching peak levels at +7 days post infection, and clear decline of RNA by day +14 days post infection, and undetectable by +28 days post infection. These findings confirm SARS-CoV-2 infection by infectious aerosols can occur. Mucosal sampling by nasal swabs showed viral RNA detected as early as +1 day post infectious aerosol exposure. Exhaled breath particle production started 3 days post infection rose to day 7 and decreased to baseline by day 14 in primates. Exhaled breath particle production was temporally consistent with viral replication in nasal swab samples.

		There was a significant association between exhaled breath particles and viral load in most primates and correlated with viral kinetics. Viral RNA was undetectable in nasal swab samples of infected primates by day 28 post-infection.
Port (2020) (17) *Preprint* *In Vivo Study* USA Dec 2020* *new*	Three groups of female *Mesocricetus auratus* (Syrian hamsters) (n=36) were infected with SARS-Cov-2 virus aerosols and other types of exposures (i.e., fomites and intranasal). Infected animals were compared to unexposed controls (n=12). Exposure by SARS-CoV-2 aerosols ($1.5x10^3$ TCID50) was by a 3 jet collision nebular; particle size ranged from 1-5 um. Viral shedding and replication patterns measured in respiratory tissue and by fecal and oropharyngeal swabs. During separate airborne transmission experiments two transmission pairs (n=4) were co-housed in cages separated by a perforated plastic divider that prevented direct contact. The susceptible animals were placed in the direction or against the air flow from infected animals; four transmission pairs (n=8). Infection	The authors found mode of SARS-CoV-2 infection transmission played a factor in disease severity, viral load, and virus shedding in the animal model. Early virus replication (1 day post infection), peak respiratory shedding of virus at 2 days from exposure, and higher early viral loads in lung and tracheal tissue (p = <0.0001), was observed among aerosol exposed animals when compared to other exposure types. Viral titers in lung tissue showed a positive relationship with upper and lower respiratory tract pathology and weight loss, which lead the authors to suggest early respiratory shedding (as observed among animals infected by aerosols) may predict acute disease manifestation. In the indirect contact experiments assessing airflow based transmission no symptoms linked to infection were observed in the susceptible animals but 25% (n=1/4) seroconverted. This seroconversion (i.e., virus exposure) was linked to directional airflow from the infected to host animals. Of note, it was observed fomite transmission was linked to delayed disease manifestation with longer duration of time between exposure and viral replication in respiratory tissue, which led to reduced disease severity.

	detected based on serum seroconversion.	
Zhang (2021) (18) *Preprint* *In Vivo Study* USA Jan 2021* *new*	Investigated the risk of SARS-CoV-2 infection transmission from aerosol exposure, and risk of re-infection at re-challenge between naïve infected and previously infected transmission pairs of *Mesocricetus auratus* (Syrian hamsters). In the aerosol transmission experiments infected and donor hamsters (n=6) were housed in transmission cages with wire mesh partitions that prevent indirect and direct contact between animals, but permitted airflow. Live virus levels in respiratory tissue over the post exposure period was measured to confirm re-infection.	Experiments found SARS-CoV-2 was efficiently transmitted from infected naïve hamsters to previously infected hamsters by airborne transmission, among all transmission pairs. Based on viral RNA levels in respiratory tissue, the investigators conclude prior infection to have provided provide some good protective immunity but not complete immunity against re-infection at re-challenge; replicating live virus was present in the re-infected animals.
Sia (2020) (44) *In Vivo* Study Hong Kong* May 2020*	Experimental study that investigated SARS CoV-2 infection transmission via aerosols in Mesocricetus auratus (Syrian hamsters). Infected and susceptible animals were housed in adjacent wire cages placed 1.8 cm away from one another (3 different pairs)	Efficient indirect transmission of infection to susceptible hamsters occurred in all three pairs within experimental settings. Peak viral load in aerosol exposed hamster was at 3 days post contact.

	were exposed to one another for 8 hours.	
Kutter (2020) (45) *Preprint* *In Vivo Study* Netherlands* Oct 2020*	An experimental set-up where infected and susceptible pairs (i.e. transmission pairs) of individually housed *Mustela putorius furo* (ferret) (n=8) were connected through a hard 15 cm air duct opening with multiple 90⁰ turns. Airflow was directed upwards from the donor to indirect recipient animals. Air travelled an average of 118 cm (approx. 3 ft.) through the tube systems. Note: transmission of SARS-CoV-2 and SARS-CoV was investigated.	Indirect transmission of SARS-CoV-2 between two ferrets more than 1 meter away was confirmed in 50% separately housed transmission pairs. Infection in susceptible animals were confirmed through the detection of viral RNA in throat and nose swabs.
Kim (2020) (46) *In Vivo Study* South Korea* May 2020*	An experimental study of SARS-CoV-2 transmission between *Mustela putorius furo* (ferret) separated by a partition (n=6). Indirect contact of ferrets was maintained by a permeable partition between cages to separate susceptible and infected ferrets.	The authors found 33% of indirect contact ferrets were positive for viral RNA in nasal washes and fecal specimens. Authors suggest aerosol transmission to have occurred among indirect contact ferrets.

*Estimated based on author affiliations and publication date.

SARS-COV-2 VIABILITY IN AEROSOLS

Three studies measured the half-life of viral particles suspended in artificial aerosols within experimental settings studies and confirmed the viability of virus in artificial aerosols by plaque assays and cell culture (19, 47, 48). These studies found SARS-CoV-2 virus titers remained stable in artificially created aerosols up to timeframes that ranged from 2 to 16 hours (19, 47, 48). The stability and infectiousness of virus in artificial aerosols appear to be dependent on environmental factors such as temperature, humidity and simulated sunlight levels, as previously suggested in some computer generated analysis. One experimental study demonstrated simulated sunlight had the largest impact on decay rate, high temperatures (only 10-40°C were tested) had a moderate impact and a significant interaction with sunlight whereas relative humidity had the least influence on decay overall and only at high (70%) relative humidity (19).

Table 3: Experimental evidence confirming SARS-CoV-2 virus stability in aerosols (n=3)

STUDY	**METHOD**	**KEY OUTCOMES**
Dabisch (2020) (19) Simulation experiments USA* Aug 2020* *new*	Measured the viability and persistence of SARS-CoV-2 in artificially generated aerosols within a drum aerosol chamber across a range of temperatures (10 °C, 20 °C, 30 °C and 40°C), relative humidity (20%, 45% and 70%), and simulated sunlight levels of zero integrated UVB irradiance (i.e., indoor/night/darkness), 0.9 W/m2 UVB irradiance and 1.9 W/m2 integrated UVB irradiance (i.e., summer midday sunlight). Viral concentration was held at mean value of 2.3 ± 0.4 $\log_{10}$ $TCID_{50}$/L-air during the experiment. Infectiousness of virus within aerosols was measure using micro titration assay and Vero cells. Experiment results informed a regression model predicting	The time needed for a 90% decrease in infectious virus at 400C, 20% relative humidity increased from 4.8 min with sunlight representative of noon on a clear summer day outdoors, to more than 2 hours under conditions representative of indoors or at night. Across other temperature and humidity levels the decay per minute in midday sun simulations ranged from 38.1% ± 8.9% per minute at 40 °C and 20% relative humidity, to 18.9 ± 4.8% per minute at 10 °C and 20% relative humidity. For moderate sunlight representing spring and fall intensity at 40 °C, decay rates ranged from18.0 ± 6.2% per minute at 30 °C and 45% relative humidity, to 11.1 ± 4.6% per minute at 10 °C and 20% relative humidity. In the absence of sunlight <2% decay (mean) per minute rate was estimated, for

	aerosolized SARS-CoV-2 decay under variable conditions.	most tested temperature and humidity levels. Exceptions were in the higher temperature and/or humidity ranges: - Decay rate at 30 °C with 70% relative humidity was 6.3 ± 2.6% per minute. - Decay rate at 40 °C with 20% relative humidity was 3.9 ± 0.4%. In the regression analysis sunlight had the largest influence on decay followed by temperature and a sunlight x temperature interaction. Humidity (relative or absolute) had the lowest influence on the decay constant. Thus, more intense sunlight and high temperatures >30°C had faster decay rates.
Fears (2020) (47) Simulation experiments USA* Sep 2020*	The long-term persistence of artificially generated viral aerosol suspensions of SARS-CoV-2 was measured at different time intervals. Viral contents were quantified by RT-PCR, and infectiousness of virus was measured by plague assay. Samples were qualitatively assessed by electron microscopy.	Infectious SARS-CoV-2 was detected at 10 minutes, 30 minutes, 2, 4, and 16 hours during the aerosol suspension stability experiment. A minimal reduction in viral genome copies in aerosol samples (as measured by RT-PCR) was noted for the measured time points. A minor but constant fraction of the SARS-CoV-2 virus in aerosols maintained replication-competence at all measured time points, including at 16 hours. Qualitative assessment of virion integrity revealed virions were either ovoid or spherical in shape, and maintained the expected morphologies up to 16 hours in aerosol suspension.
Van Doremalen (2020) (48) *LTE* Simulation experiment	In this experiment SARS-CoV-2 and SARS-CoV-1 virus titer stability and decay was measured from artificially generated aerosols, in Vero 6	SARS-CoV-2 virus remained viable in experimentally generated aerosols up to 3 hours (duration of the experiment), with a reduction in infectious titer from $10^{3.5}$ to $10^{2.7}$ $TCID_{50}$ per liter of air

USA* Spring 2020*	cell culture. Analysis used a Bayesian regression model.	In aerosols the half life of SARS-CoV-2 virus was estimated to be 1.1-1.2 with a 95% credible interval of 0.64-2.64.

*Estimated based on author affiliations and publication date.
LTE= letter to the editor

SARS-COV-2 RNA IN EXHALED BREATH

Six studies investigated the presence of viral RNA in exhaled air samples or exhaled breath condensate samples of SARS-CoV-2 from human cases (20, 50-53).

Two different exhaled breath sampling techniques were identified across the studies: some studies collected exhaled breath condensate while others collected exhaled air samples from infected individuals. Exhaled breath condensate techniques collect 1-2 ml of condensate by the cooling and condensation of exhaled air during quiet breathing. Some investigators have suggested the exhaled breath condensate technique is better suited for identifying biomarkers expelled from the lower respiratory tract, and results in reduced false negative results by RT-PCR (50, 54).

Five of the included studies reported at least one exhaled air sample positive for viral RNA. Among the identified studies that confirmed the presence of viral RNA in some exhaled samples, four applied the exhaled breath condensate technique while two were based on exhaled air sampling. Sample positivity ranged from 16%-93.5% in exhaled breath condensate sampling studies to 40% in the single exhaled breath sampling study with positive results. One study reported no positive samples, for both exhaled breath condensate and exhaled air collection techniques (53). The variability in viral RNA positivity across exhaled breath samples may be linked to the infectious course of sampled individuals. However, the lack of clinical information on exposure and symptom onset dates, symptoms, as well as viral loads and viral replication in respiratory tissue, at the time of sample collection limit inferences between viral exhalation and infection course. Based on evidence that peak viral load occurs between one day before and up to five days post symptom onset, hospitalized or symptomatic individuals several days into their infection may not be an appropriate sample for measuring viral RNA within exhaled breath (43, 55). Hospitalized individuals may no longer be infectious at the time of sample collection, which should not be interpreted as a lack of evidence supporting infection emission by exhaled breath during the early infection period.

Table 4: Biological monitoring studies on SARS-CoV-2 RNA in exhaled breath (n=6)

STUDY	**METHOD**	**KEY OUTCOMES**
Reporting SARS-CoV-2 in samples		
Ryan (2020) (50)	Exhaled breath condensate samples were collected	93.5% (29/31) of the collected exhaled breath samples from SARS-CoV-2 patients (clinically

Exhaled breath condensate monitoring study Ireland Apr - May 2020 *new*	from COVID-19 patients using RTUBE condensers. The sample included nasopharyngeal swab positive (n=16) and nasopharyngeal swab negative with clinical diagnosis of COVID (n=15) patients. Additional samples from pre-SARS-CoV-2 were included as controls (n=14). Virus in samples was detected by RT-PCR using different viral gene assays. Note: Clinical diagnoses of COVID-19 were based on clinical expertise and imaging results.	confirmed and/or positive nasopharyngeal swab results) were positive by RT-PCR targeting all four genes (E, S, N, ORF1ab). All pre-pandemic control samples were negative. In this study exhaled breath was shown to be a sensitive and non-invasive sample type. Positivity of samples varied by RT-PCR assay target sequence among nasopharyngeal swab negative patients (n=15): - 66% (10/15) positivity for viral envelope (E)/ spike (S) proteins gene assays (used for the nasopharyngeal swab). - 73% (11/15) positivity for viral nucleocapsid (N)/open reading frame (ORF1ab) gene assays. The combined results equated to 14/15 clinically diagnosed cases positive on at least one assay.
Zhou (2021) (49) Exhaled breath condensate monitoring study China Feb - Mar 2020 *new* Note: Additional results on viral RNA in air samples are summarized in Table 5.	COVID-19 patients (n=10) about to be discharged from hospital (as per negative throat and nasal swabs) were recruited from multiple hospital sites. Exhaled breath condensate was sampled using using a BioScreen II device. SARS-CoV-2 RNA in breath samples was quantified using RT-PCR.	22.2% of 9 COVID-19 patients about to be discharged from hospital had SARS-CoV-2 in their exhaled breath samples at a concentration of ~10^5 RNA copies/m^3. Both patients were over the age of 70. It was estimated that some COVID-19 patients in the sample were exhaling the virus at a rate of ~1400 RNA copies per minute into the air at discharge.
Ma (2020) (51) *Preprint*	Exhaled breath condensate samples were collected from COVID-19 patients	The study confirms the emission of SARS-CoV-2 virus RNA into the air from exhaled breath condensate of infected individuals (16.7% n=5/30). The positive samples were detected either <3 days from symptom onset

Exhaled breath condensate monitoring study China Spring 2020* Note: Additional results on viral RNA in environmental air samples are summarized in Table 5.	(n=30) using a BioScreen device.	(n=3) or within 7-14 days from symptom onset (n=2). SARS-CoV-2 levels in exhaled breath were estimated to reach 10^5-10^7 copies/m^3 if an average breathing rate of 12 L/min is assumed and is highest during early stages of infection.
Di Carlo (2021) (20) Exhaled air monitoring study Italy Apr - Jun 2020 Note: Additional results on viral RNA in environmental air samples are summarized in Table 5 *new*	Tests the release of SARS-CoV-2 RNA into the air during normal breathing – without coughing, sneezing or talking among infected cases (n=5). These cases were all in hospital patients admitted to hospital for non-COVID symptoms who later developed COVID symptoms during hospital stay. Sampled individuals were housed in airborne infection isolation rooms (AIIR) and exhaled breath samples were collected using Sartorius AirPort sampler. Patient oropharyngeal, nasopharyngeal and salivary swabs samples were also collected at the time of breath samples.	The days since symptom onset to sample collection varied from 7- 56 days in the patient sample. Oropharyngeal and nasopharyngeal swabs of 4 patients were positive at the time of sampling. Viral RNA was detected at 1 cm distance from patients' mouths in two patients (40% n=2/5). Both had positive oropharyngeal, nasopharyngeal and salivary swabs. Salivary swabs were negative in the patients with negative exhaled air samples who were reported to be infected based on consecutive positive swab samples. In one of these patients, wearing a surgical mask effectively blocked viral RNA detection at 1 cm (masked samples were not collected from the other patient with positive exhaled air samples). Air samples at 1 cm from RT-PCR negative patients were negative for viral RNA.
Feng (2020) (52)	Sampled exhaled breath and environmental air of COVID-19 patients using a NIOSH bio-aerosol sampler.	SARS-CoV-2 RNA was not detected in any of the patients' expired breath samples (n=0/9). Viral RNA was isolated in exhaled breath

Exhaled air & exhaled breath condensate monitoring study China Feb - Mar 2020 Note: Additional results on viral RNA in environmental air samples are summarized in Table 5.	Exhaled breath condensate was sampled using a sterile laboratory-made collection system. Air samples were segregated by aerosol size. Samples were collected from COVID-19 patients in the later stages of infection in hospital settings.	condensate (25%; n=2/8), and bedside environmental air samples (8%; n=1/12). The authors attributed minimal contamination of viral RNA in study samples to reduced respiratory viral shedding among patients in later stages of infection.
Reporting NO SARS-CoV-2 in samples		
Ding (2020) (53) *Preprint* Exhaled air and exhaled breath condensate monitoring study Hong Kong Feb 2020 Note: Additional results on viral RNA in environmental air samples are summarized in Table 5.	Exhaled breath condensate samples (n=2) and expired air samples (n=2) were collected from COVID-19 patients housed in airborne infection isolation rooms (AIIR). Multiple devices were used for air sample collection (n=27), which was conducted on different days. Note: sample collection distances from patient(s) are not reported.	All collected exhaled condensate samples and expired air samples were negative for SARS-CoV-2 RNA.

*Estimated based on author affiliations and publication date.

SARS-COV-2 RNA IN ENVIRONMENTAL AIR

Forty-nine biological monitoring studies that investigated SARS-CoV-2 in air samples collected from patient care settings, such as airborne infection isolation rooms (AIIR), ICU, emergency wards, hospital wards, nursing homes, diagnostic areas (e.g., CT scan) and outpatient clinics, were identified (Table 5). All of these studies report the presence of confirmed case(s) in the proximity of sample collection. The majority of studies (n=29/40) reported the isolation of viral RNA from at least one collected air sample by RT-PCR. Three studies successfully cultured virus particles isolated from a very small number of positive air samples in cell culture, thus providing evidence to support virus viability in air (56-58). All of these air samples with viable virus were collected close (<2 meters) to confirmed cases. Furthermore, air samples taken at 1-4.8 m from confirmed cases consistently identified SARS-COV-2 RNA, with higher concentrations of viral RNA when the collection apparatus was positioned closer to the case (21, 56-61, 64, 65, 93)

A single study in a patient care setting demonstrated opening the windows in the COVID-19 patient's room to be beneficial and reduced the viral concentration in the air sample from 10^5/ml to less than 10^4 (61). Another study compares environmental air samples collected from inpatient hospital rooms and quarantine households with active cases (24). The household environmental air samples were estimated to be approximately eight times (OR 8.75 [95% CI 1.21-63.43; p=0.058]) more likely to be contaminated with viral RNA than hospital air samples. The investigators suggested variability in air exchanges and ventilation between patient care and community settings to be the main difference that influenced air contamination between the two settings, as such room ventilation was suggested to be a more important factor than disease acuity with respect to environmental air contamination.

Nine biological monitoring studies of SARS-CoV-2 in air samples from community settings (i.e., a car driven by an infected case, shopping mall, concert hall, hotel quarantine rooms and households, mink farm, public buses and subway trains) were identified (Table 6). The majority of these studies (n=5/9) confirm the presence of viral RNA by RT-PCR and in one study, air samples from a car with a COVID-19 case isolated virus in cell culture (23). The study in the car highlights that significant quantities of viable SARS-CoV-2 can be expelled from even mild cases over short periods of time (23). A study on a mink farm with an ongoing outbreak highlights high levels of virus within the farm, which is a risk for the workers, however there was low risk outside of the farm to the surrounding community (66). The identification of positive air samples from quarantine households and hotel rooms with active cases was variable and requires further investigation, as some studies identified positive samples while others did not (24, 67, 68). Two environmental sampling studies of public venues, including a concert hall, a shopping mall, and public buses and subway trains also confirm the presence of viral RNA in air samples (61, 69). Interestingly, these studies do not confirm the presence of cases in the proximity of air sample collection but indicated high levels of community transmission in sampled settings (61, 69).

A range of air sampling methods were used across the included biological monitoring studies. Some studies used different air sampler models while others used fluid filled petri dishes, gelatin filters, agar plates and novel COVID-19 traps to sample environmental air. The variability in sampling methodologies may have contributed to the observed differences in viral RNA detection and confirmation of virus viability and infectiousness in environmental air samples. Only a small number of studies confirmed the viability of virus in cell culture and all samples were very close (<2 meters) to infected individuals.

The authors who reported no virus contamination in air samples collected from patient care settings often suggested effective disinfection, high efficiency air ventilation and filtration systems fitted to AIIR as possible reasons for negative results. This rationale is further supported by one biological monitoring study which was unable to detect viral RNA in collected samples when the air sampler inlet was covered with a HEPA filter (56).

Among the identified studies, viral RNA concentration within contaminated samples, isolated aerosol particle sizes and fractions, sampling distance from COVID-19 cases, air sample volume, and any attempts to culture isolated virus particles were not consistently reported. Moreover, the majority of studies did not provide clinical information, such as symptom onset data or presence of respiratory symptoms, on the cases present during air sample collection, nor ventilation and air flow in the sampled setting. These data gaps make it difficult to determine the conditions upon which infectious virus in environmental air samples becomes more frequent.

Table 5: Biological monitoring studies investigating SARS-CoV-2 within air in patient care settings (n=40)

STUDY	**METHOD**	**KEY OUTCOMES**
SARS-CoV-2 in cell culture samples		
Lednicky (2020) (56) Biological monitoring study USA* Nov 2020*	Air samples were collected in triplicate from hospital rooms of COVID-19 patients in the absence of aerosol generating procedures. Air samples were collected using a VIVAS air sampler at 2 to 4.8 meters away from patients, with and without a HEPA filter on the air sampler inlet tube. Virus in isolated air samples was measured using RT-PCR, and infectiousness was measured based on cytopathic effects in cell culture (LLC-MK2 and Vero-E6). The genomes of isolated virus was sequenced.	Viable (infectious) SARS-CoV-2 was found to be present in aerosols sampled from hospital patient rooms by RT-PCR and cell culture (via cytopathic effects) All air samples collected without a HEPA filter was positive for viral RNA. A single nearly complete virus sequence was isolated from the air samplers that collected environmental air. This genetic sequence matched the virus strain isolated from nasopharyngeal sample of one of the two patients who occupied the room during sampling. The matched person was diagnosed with acute infection at the time of air sampling.
Santarpia (2020) (57) *Preprint* Biological monitoring study USA Apr 2020	Patient generated aerosols in hospital air samples were collected using a NIOSH BC251 aerosol sampler at the foot of COVID-19 patient beds. Aerosol sizes and concentration was concurrently measured during sample collection using an	RNA was detected in all six patient rooms, and included all aerosol particle size fractions (defined as >4.1 µm, 1-4 µm, and <1 µm). Replicating virus in cell culture was observed in most <1 µm aerosol samples, two of the 1-4 µm size aerosol

	Aerodynamic Particle Sizer Spectrometer. Aerosols were distinguished by the proportion of different sizes (>4.1 µm, 1-4 µm, and <1 µm) among samples. Presence of the virus in isolated aerosols (<5µm) was measured using RT-PCR, western blot, and transmission electron microscopy and infectiousness of isolated viral particles was examined using cell culture (Vero-E6). Note: The study does not specify if the patients were housed in regular wards or AIIR.	samples and two of the >4.1µm samples. Western blot and TEM analysis of these samples also showed evidence of viral proteins and intact virions. The authors conclude the infectious nature of the aerosols collected in this study suggests that aerosol transmission of COVID-19 is possible.
Santarpia (2020) (58) Biological monitoring study USA Mar 2020	Air samples from negative pressure isolation spaces and wards housing COVID-19 cases were collected using a Sartorius Airport MD8 air sampler and tested for SARS-CoV-2 viral RNA by RT-PCR. A subset of positive samples were examined for viral propagation in Vero E6 cells. Several indicators were utilized to determine viral replication including cytopathic effect, immunofluorescent staining, time course PCR of cell culture supernatant, and electron microscopy.	63.2% of in-room air samples were positive by RT-PCR (mean concentration 2.42 copies/L of air). Two samples placed at different proximity to a patient, including a sample from <2 meters away the patient, were positive. Viral concentration was higher in the air sample collected closer to the patient (4.07 vs. 2.48 copies/L of air). 58.3% of air samples collected from hallways were positive (mean concentration of 2.51 copies/L of air). Some viral replication was observed in a single positive sample collected from a hallway.
SARS-CoV-2 RNA in samples		
Munoz-Price (2021) (24) Biological monitoring study US Spring 2021*	Air samples (n=16) collected from hospital ICU inpatient rooms occupied by confirmed COVID-19 cases. Air samples were collected using the Sartorius MD8 airscan sampler, positioned at 0.3 -1.8	12.5% (n=2/16) of hospital air samples were only positive for viral RNA. These samples where collected at 0.3 meters from confirmed cases. The patients had mild severity of illness and were not on

new Note: Additional results on viral RNA in environmental air from household settings are summarized in Table 6.	meters from patients' head. Viral RNA in samples was measured by RT-PCR.	supplemental oxygen at the time of sample collection.
Razzini (2020) (70) Biological monitoring study Italy Apr 2020* *new*	Air samples (n=5) collected from hospital areas with COVID-19 cases using a MD8 Airport Portable Air Sampler with gelatin membrane filters. Samples were collected from three zones, contaminated (corridor for patients and ICU), semi-contaminated (undressing room) and clean areas (medical staff dressing and locker areas). Viral RNA in samples was measured by RT-PCR.	All the air samples collected from COVID-19 cases' ICU and corridor were positive for viral RNA; samples from other areas were negative. Viral concentration in (mean Ct) across ICU air samples was 22.6, and 31.1 for corridor air samples.
Ge (2020) (71) Biological monitoring study China Jun 2020* *new*	Air samples (n=33) were collected using the NIOSH bioaerosol sampler BC251. Sampled settings were ICU, hemodialysis clinics, fever clinics, and respiratory wards. Viral RNA in samples was measured by RT-PCR.	All air samples (n=3) from the ICU setting were positive for viral RNA. Viral concentrations in samples ranged from Ct 36.5 - 37.8.
Hu (2020) (72) Biological monitoring study Feb – Mar 2020 China *new*	Air (aerosol) samples were collected from multiple hospital sites using a centrifugal aerosol-to-hydrosol sampler (n=123). Viral RNA in samples was measured by RT-PCR and viability by Vero-E6 cell culture.	Eight air samples (21%) from ICU environments and one same from (16%) from the CT (computerized tomography) room were positive for viral RNA. The range of virus concentrations in the positive air (aerosol) samples was 1.11×10^3 to 1.12

		× 10^4 RNA copies m^{-3}. The virus could not be cultured from positive samples.
Seyyed (2020) (73) Biological monitoring study Iran May 2020* *new*	Air samples (n=10) were collected from COVID-19 patient ICU wards using a sampling pump with a porous midget impeller. Viral RNA in samples was measured by RT-PCR.	60% of air samples were positive for viral RNA. The highest RNA concentrations were measured in samples from between patient beds (3913 copies per ml). These were air samples collected at 1.5 to 2 meters from patient beds.
Moore (2020) (59) Biological monitoring study England Mar –May 2020 *new*	Air samples (n=55) were collected from COVID-19 patients with and without respiratory symptoms, from eight different hospitals. Sampled settings included AIIR, general COVID-19 wards and non-COVID-19 wards. Samples were collected using a Coriolis µ air sampler and/or Sartorius MD8 air sampler. Viral RNA in samples was measured by RT-PCR, and viability by Vero-E6 cell culture.	7% (n=4) of air samples were positive for viral RNA, at low concentrations from <10 to 460 genomic copies/m^3 air. The virus could not be cultured from positive samples. All positive samples were collected at 1 meter distance from patients, and days since symptom onset among the patients ranged from 8-10 days.
Hernández López (2021) (60) Biological monitoring study Jan 2021* Mexico *new*	Air samples (n=15) from emergency, internal medicine and COVID-19 patient rooms and multiple bed patient care rooms in two hospitals were collected using a Millipore sampler. Viral RNA in samples was measured by RT-PCR.	Three air samples (20%) were positive for viral RNA. All positive samples were from the COVID-19 patient room and near the patient.
Tan (2020) (74) Biological monitoring study China Mar 2020 *new*	Air samples (n=12) were collected from ICU and isolation wards of COVID-19 cases in hospital, and corridors. Air samples were collected at 1 meter from a patient's head.	A single air sample from a patient care area, collected when the patient was undergoing intubation, was positive for viral RNA.

Gehrke (2021) (61) *Preprint* Biological monitoring study Germany Oct 2020 - Jan 2021 *new* Note: Additional results on viral RNA in community setting air samples are summarized in Table 6.	Air samples were collected from patient rooms in two COVID-19 isolation units, and an outpatient endoscopy facility using non-powered cold traps. Viral RNA was quantified by RT-PCR.	Hospital setting samples: No viral RNA was isolated from the first isolation unit ventilated permanently by two windows. Viral RNA was detected in samples collected from a non-ventilated corridor next to the isolation room. In the second isolation unit samples, SARS-CoV-2 RNA levels reached concentrations of 10^5/mL in non-ventilated rooms, but when windows were open to increase ventilation SARS-CoV-2 RNA concentrations in samples were reduced to 10^4/mL or less. In the endoscopy facility, 50% of cold traps were positive for viral RNA (n=6/12). 57% of cold traps (n=4/7) from endoscopy operation rooms were positive for SARS-CoV-2, but RNA concentrations (initially at 12 copies/ml) and the number of positive samples were reduced when the ventilation levels in the room was increased.
Zhou (2021) (80) Biological monitoring study China Feb- Mar 2020 *new* Note: Additional results on viral RNA in exhaled breath samples are summarized in Table 4.	Air samples (and exhaled breath samples) of hospitalized COVID-19 patients were collected from multiple hospital sites. Air samples were collected from hospital corridors, waste storage rooms, ICU rooms, toilets, medical preparation rooms, clinical observation rooms, and general wards. Air samples were collected using the Air-nCoV-Watch (ACW) system and viral RNA quantified by RT-PCR.	6.8% of the air samples (n =3/ 44) were positive for viral RNA at digital PCR concentration levels ranging from 9-219 viruses/m^3.
Yarahmadi (2021) (64)	Air samples were collected (n=20) from an ICU ward at, 1) a	50% (n=2/4) of samples from the patient breathing zone were positive for

Biological monitoring study Iran Feb 2021* *new*	COVID-19 patient breathing zone (i.e., side table next to patient's head), general area (10 meters from the ICU unit), and breathing zone of health care personnel near the COVID-19 patient's bed, and 1 meter from the patient's bed. Samples were collected using NIOSH and ASHRAE bioaerosol samplers. Viral RNA was detected by RT-PCR.	viral RNA. The positive samples were from a confirmed case, and negative samples were from a suspected case. 12.5% (n=1/8) of samples from health care personnel breathing zone were positive for viral RNA. 12.5% (n=1/8) of samples from the general area were positive for viral RNA. Authors suggest bioaerosols maybe present due to the re-aerosolization of previously airborne SARS-CoV-2 particles from health care personnel walking between different wards and stations of the ICU.
Ong (2021) (93) Biological monitoring study Singapore Jan 2021*	Air samples were collected from AIIR in a hospital and community isolation facility (naturally ventilated) housing confirmed COVID-19 patients, at 1 meter away from the patient. Air samples were collected using a BioSpot-VIVAS BSS300-P bioaerosol sampler (collecting particles <4.34 µm in size). NIOSH aerosol samplers were used to validate the Biospot results. SARS-CoV-2 RNA was detected by RT-PCR, and cultured using Vero C1008 cell culture.	50% of BioSpot air samples from hospital AIIR (n=6/12) were positive for SARS-CoV-2 RNA (concentrations ranging from 178.9 to 2,738.4 copies/m^3). Positive samples were collected from rooms with at least one symptomatic patient (<7 days post symptom onset). NIOSH aerosol samplers detected SARS-CoV-2 RNA in aerosols <1 µm, 1–4 µm, and >4 µm in diameter. Only 1 of 9 samples from the community isolation facility was positive for SARS-CoV-2 RNA, with a concentration of 978.3 copies/m^3. Virus cultures of all positive samples were negative.
Dumont-Leblond (2020) (21) Biological monitoring study Canada Mar-June 2020	Sampled air from AIIR rooms from a Quebec hospital housing non-severe COVID-19 patients (n=22). Air samples were collected (with 3 µm gelatine filters and 0.8 µm polycarbonate filters) using a SASS 3100 dry sampler, at 1.5m	11% (n=11/100) of air samples collected at the bedside of 6 patients were positive for viral RNA. These patients had higher frequency of fever, dyspnoea, and cough compared to others in the sample. Most were males

new	away from the patient bedside. Viral contamination was measured by RT-PCR and Vero E6 cell culture.	and had a slightly longer duration of hospitalization. Average SARS-CoV-2 viral load in the positive sample rooms was estimated at 4.86E+4 virus genomes per hour. No virus isolated from air samples could be cultured.
Binder (2020) (75) Biological monitoring study USA Apr-May 2020 *new*	Environmental swabs and aerosol samples were collected from single patient hospital rooms housing COVID-19 patients (n=20, 16 symptomatic and 4 asymptomatic) within a dedicated COVID-19 ward. Bioaerosols were collected using a NIOSH BC 251 sampler placed at different distanced from the patients' heads (1, 1.4, 2.2, and 3.2 meters). Empty hospital rooms, hallways, staff break room and staff workstations were sampled as controls. SARS-CoV-2 viral contamination was measured by RT-PCR, and Vero EC6 cell culture.	Three samples collected from three of the COVID-19 patient rooms were positive for viral RNA; samples were collected at 1.4-2.2 meters from the patients. These patients were 4-10 days post symptom onset (runny nose, headache, fever, cough, difficulty breathing, fatigue, loss of smell, gastrointestinal symptoms). Viable virus could not be identified in bio aerosols samples via cell culture. Samples from other area were negative for SARS-CoV-2 RNA.
Passos (2021) (76) Biological monitoring study May-Aug 2020 *new*	Air samples were collected from two different hospital environments (n=52) using active and passive aerosol sampling methods. Active sampling used multiple portable/hand-held air sampler models (AIRIDEAL 3P, MD-8 AirPort, HANDI-VOL) and filter types (cellulose, PTFE or quartz microfiber filters). The passive method used petri dishes for the collection of sedimentable particles. Both hospitals housed	Air samples from four areas sampled in one hospital (at 100% ICU occupancy at the time of sampling) were positive for viral RNA in suspended particles (filter pore size >0.2 µm and >0.3 µm), as well as 11% of sedimentable particles (n=4/36). Positive suspended air particle samples were detected from inside the COVID-19 ICU ward (concentration of 0.33 genomic units m^{-3} @ distance >2 from patient), in a protective apparel removal room (0.14 genomic units m^{-3}), storage room for patient mobile toilets and

	COVID-19 patients in dedicated ICU wards at the time of sample collection. Aerosol samples were also collected from multiple outdoor public spaces using high-volume air samplers (AGV, Energética). SARS-CoV-2 RNA in samples was detected by RT-PCR.	soiled patient linens (0.19 genomic units m^{-3}). The storage room was open to natural ventilation. SARS-CoV-2 RNA positive sedimentable particles were detected in samples collected from an external corridor adjacent to the COVID-19 dedicated ICU. All outdoor air samples and samples collected at the other hospital (i.e., Hospital 1) l (at 33% occupancy at the time of sampling) were negative for SARS-CoV-2 RNA.
Lane (2021) (65) Biological monitoring study Jan 2021* *new*	Air samples were collected from multiple hospital units, AIIR, ICU nursing stations, family/visitor corridors outside of ICUs, medical unit, and patient room hallways. NIOSH 251 2-stage cyclone samplers collected air samples (limit of detection of 8 viral copies/m^3 of air). Two patient rooms housing COVID-19 patients were used as positive control samples. Viral RNA was detected by RT-PCR.	The two positive control samples collected from two confirmed COVID-19 patient rooms were positive for viral RNA. None of the air samples (n=528) from other sampling area were positive for SARS-CoV-2 RNA.
Liu (2020) (77) Biological monitoring study China Feb-Mar 2020	SARS-CoV-2 RNA concentration and aerosol size distributions in air samples (n=30) from multiple sites within or near a hospital and field hospital. All aerosol samples (n=30) were collected on pre-sterilized gelatin filters (Sartorius). Three size-segregated aerosol samples were collected using a miniature cascade impactor (all sampled	SARS-CoV-2 contamination in air samples was low to undetectable. In the field hospital setting, the greatest suspended SARS-CoV-2 RNA in aerosols was identified in a temporary patient toilet room (1 m^2 area) with low ventilation, likely from the patient breathing or aerosolization of virus from feces and urine of infected patients. Samples from the field hospital staff personal rooms demonstrated the

	from staff areas). Viral RNA was detected by RT-PCR.	greatest virus concentrations. Aerosols from 0.25 to > 2.5 µm were identified. The authors hypothesize this came from healthcare worker PPE surfaces and apparel. Low but detectable viral RNA concentrations were found at a department store entrance and an outdoor site near the hospital suggesting this may have occurred due to high traffic flow and crowding. Note: The specific concentrations of airborne SARS-CoV-2 in each aerosol sample by site are provided in the publication.
Chia (2020) (78) Biological monitoring study Singapore Spring 2020*	Detection of air contamination by SARS-CoV-2 in airborne infection isolation rooms (AIIR) housing COVID-19 patients, in hospital settings. Air samples were collected, and aerosol sizes were measured by NIOSH BC 251 bio-aerosol samplers. Viral RNA was detected by PCR.	66% (n=2/3) of the air samples collected from AIIR environments were SARS-CoV-2 RNA positive. The smallest aerodynamic size fraction that contained detectable levels of SARS-CoV-2 RNA was 1–4 µm. Total SARS-CoV-2 concentrations in air ranged from 1.84×10^3 to 3.38×10^3 RNA copies per m^3 air sampled. The authors suggest the presence of SARS-CoV-2 in the sampled air is likely highest during the first week of illness, when respiratory viral load is high.
Jin (2021) (79) Biological monitoring study China Feb-Mar 2020 *new*	Air samples were collected from an ICU housing a single ready-for-discharge COVID-19 patient, 2 days after the patient tested negative for SARS-CoV-2. Air samples were collected from the isolation room and staff PPE dressing room. High-volume air samples were collected using a WA 400 Portable viral aerosol	A single air sample from the ICU ward isolation room was positive (1/7, 14.29%) for viral RNA. The authors state their findings suggest the virus may be shed via aerosol for days, even after a patient has tested negative.

	sampler. Viral RNA in samples was detected using RT-PCR.	
Zhou (2020) (81) Biological monitoring study UK Apr 2020	Three to five air samples were collected from multiple hospital environments using a Coriolis air sampler, viral RNA was measured by RT-PCR, Vero E6 and Caco2 cells cultures were used to culture virus.	38.7% (n=14/31) of the collected air samples were positive for viral RNA, but SARS-CoV-2 virus could not be cultured due to low recovered viral loads. The odds of contamination in public areas was lower than areas immediately occupied by a COVID-19 patient (OR 0.5 95% CI 0.2-0.9).
Orenes-Piñero (2020) (81) Biological monitoring study Spain Spring 2020*	Investigators develop and apply "COVID traps" to measure the capacity of SARS-CoV-2 aerosol transmission in hospital patient care settings. "COVID traps" were placed 1 meter away from patients in ICU and ward settings. Viral RNA was detected by RT-PCR.	In the ICU, none of the "COVID traps" were positive for COVID-19; all COVID-19 patients were intubated. In the ward setting, two "COVID traps" were positive for SARS-CoV-2, both were near a patient requiring the use of respiratory assistance. The authors conclude it was unequivocally the result of virus transmission in air.
Feng (2020) (52) Biological monitoring study China Feb-Mar 2020 Note: Additional results on viral RNA in exhaled breath samples are summarized in Table 4.	Environmental air from the rooms of recovering COVID-19 patients in isolation hospital wards and ICU were sampled using a NIOSH sampler. Air samples (n=12) were collected and aerosol size measured. Samplers were also placed on a tripod 1.2 m in height and 0.2 m away from the bed at the side of the patient's head for 30 minutes.	SARS-CoV-2 RNA was detected in a single air sample from SARS-CoV-2 patients. The maximum viral RNA concentrations detected in the positive air sample by particle size was 1112 copies/m^3 (<1 µm) and 745 copies/m^3 (>4 µm). The authors attribute minimal contamination of viral RNA in study samples to reduced respiratory viral shedding among patients in later stages of infection.
Ding (2020) (53) *Preprint* Biological monitoring study Hong Kong Feb 2020	Air samples (n=46) were collected from airborne infection isolation rooms (AIIR) housing COVID-19 patients, nursing stations, corridor and air-conditioning units at a hospital treating COVID-19 cases. Multiple air samplers were used	A single air sample (n=1/46) from the corridor outside a storage room with a medical waste bin was weakly positive for SARS-CoV-2 RNA. All other tested air samples from patient rooms, washrooms, and air supply inlets were negative.

Note: Additional results on viral RNA in exhaled breath samples are summarized in Table 4.	for sample collection, which was conducted on different days, and RNA was detected by RT-PCR.	RNA copies for the weakly positive sample was not quantified.
Guo (2020) (82) Biological monitoring study China Feb-Mar 2020	Air samples were collected from hospital ICU (n=40) and general wards housing (n=6) COVID-19 patients, at different distances from patients and the doctors office (n=8). Air samples were collected using a SASS 2300 Wetted Wall Cyclone Sampler.	SARS-CoV-2 virus particles were identified in 35% (n=14/40) of ICU air samples, 12.5% (n=2/16) of general ward air samples. SARS-CoV-2 aerosol was detected in 35.7% (n=5/14) of samples near air outlets, 44.4% (n=8/18) of samples in patients' rooms, and 12.5% (n=1/8) in the doctors' office area. No SARS-CoV-2 virus were identified in patient corridor air samples. Based on site(s) of positive air sample collection authors conclude virus-laden aerosols to concentrate near and downstream from patients, and the maximum transmission distance of virus laden aerosols to be 4 meters.
Nissen (2020) (83) Biological monitoring study - Hospital setting Sweden Spring 2020*	Open liquid containing petri dishes were placed at air entrances to ward rooms and near exhaust filters of a hospital's ventilation system for 24 hrs to collect viable virus. Infectivity was assessed using Vero E6 cell culture.	SARS-CoV-2 RNA was detected in fluid samples placed in the ventilation system, and in 33% of samples (n=1/3) placed near air entrances of wards. Viability of the isolated virus could not be established by cell culture.
Zhang (2020) (84) *Preprint* Biological monitoring study - Hospital setting China Mar-Apr 2020	The study sampled outdoor environment aerosols (n=16) at three hospitals receiving COVID-19 patients. Aerosol samples were collected using bioaerosol samplers WA-15. Viral RNA was quantified by RT-PCR.	SARS-CoV-2 virus was identified within sampled aerosols at 285-1,130 copies/m^3 concentrations, similar to contamination levels observed in ICU units. Viral RNA was identified up to 5 meters away from outpatient buildings (n=1/2),

		as well as in hospital waste water treatment areas (n=1/3).
No SARS-CoV-2 RNA in samples		
Dumont-Leblond (2021) (22) Biological monitoring study Canada Spring 2020 *new*	Air and no-touch surfaces of 31 rooms from multiple long-term care facilities (n=7) in Quebec were sampled. The air samples were collected 8 to 30 days after the residents' symptom onset using an IOM Multidust sampler attached to a portable pump Gillian Air 5, placed ~2m from SARS-CoV-2 positive residents. The sampled rooms did not have significant aerosol mitigation measures in place. SARS-CoV-2 RNA was quantified by RT-PCR, and cultured by Vero E6 cells. Note: the distance of surfaces from SARS-CoV-2 patients was not provided.	All air samples (n=31) were negative, but viral RNA was recovered from 32% (n= 20/62) no-touch surface samples of door frames and shelving units (concentrations range 13-36,612 genomes/surface). Authors suggested the viral load recovered from the no touch surfaces without direct contact to be indicative of viruses spread through air. Virus could not be cultured from positive samples.
Song (2020) (85) Biological monitoring study China Feb 2020 *new*	Air samples were collected from Airborne infection isolation rooms (AIIR) housing COVID-19 cases. Air samples were collected using the automatic sampling system Derenda PNS 16T-3.1, at approximately 1 meter from patient beds. Viral RNA in samples was measured by RT-PCR.	All of the samples were negative for SARS-CoV-2 RNA.
Faridi (2020) (86) Biological monitoring study Iran Mar 2020 *new*	Air samples (n=10) were collected from COVID-19 patient wards housing individuals with server and critical symptoms. Air samples were collected into the sterile standard midget impingers using a vacuum pump.	All of the samples were negative for SARS-CoV-2 RNA.

	Air samplers placed 1.5 to 1.8 m above the floor and approximately 2 to 5 m away from patients' beds. Some patients coughed during the sample collection. Viral RNA in samples was measured by RT-PCR.	
Declementi (2020) (87) Biological monitoring study Italy Sept 2020* *new*	Air samples (n=8) were collected from a COVID-19 non-Intensive Care Unit, following cleaning and disinfection processes. Viral RNA in samples was measured by RT-PCR. Note: The sampler model, the presence of COVID-19 cases during sampling nor the sampling distance from cases are provided.	All of the samples were negative for SARS-CoV-2 RNA.
Anh (2020) (88) Biological monitoring study Korea Mar 2020 *new*	Air samples were collected from the isolation rooms of severe COVID-19 patients requiring mechanical ventilation or high-flow oxygen therapy. Samples were collected using a SKC BioSampler and swab sampler. Viral RNA was measured by RT-PCR.	All of the samples were negative for SARS-CoV-2 RNA.
Masoumbeigi (2020) (89) Biological monitoring study Iran Sept 2020* *new*	Air sampling (n=31) was conducted in a hospital with COVID-19 patients; all of the patients had a severe form of cough and sneezing. Air samples were collected from Emergency wards, ICU, CT-SCAN, and laundry unit. Air sampling was performed by all-glass impinger (AGI) at ~0.5-4 m away from patients' beds. Viral RNA was detected by RT-PCR.	All of the samples were negative for SARS-CoV-2 RNA.

Alsved (2020) (90) Biological monitoring study Sweden* Spring 2020*	SARS-CoV-2 RNA measured from COVID-19 cases (n=2) within 2 days of symptom onset. Air samples were collected 0.8 meters away from the case, as the individual was talking or singing. The measurements were carried out in an experimental airtight chamber with human volunteers.	Air samples collected within 0.8 meters of COVID-19 cases were negative for viral RNA. Viral loads in subject airways at the time of the experiment could not be obtained. Authors state qPCR Ct values of 22–25 to have been reported in clinical reports for the subjects within 24hrs of the experiment.
Cheng (2020) (91) Biological monitoring study China Jan-Apr 2020	Air samples were collected within 10 cm of asymptomatic and symptomatic COVID-19 patients (n=6) with and without surgical masks in AIIR were tested for SARS-CoV-2 contamination. Viral loads in respiratory patient fluid samples were also tested by having patients sneeze and spit into gelatin filters within air samplers. Viral loads were measured using assays (not specified) and RT-PCR.	No virus was detected in air samples from rooms with both surgical masked and non-masked patients. Except for one patient who had a respiratory fluid viral load of 2.54 x 10^4 copies/ml, all other patients' samples from sneezing were negative for virus RNA. Authors suggest aerosol transmission is not the predominate mode of infection transmission in the sampled settings. Appropriate PPE use, environmental disinfection, and single occupancy within AIIR are provided as reasons for observed results.
Kim (2020) (92) Biological monitoring study South Korea Mar-Apr 2020	Air samples (n=52) were collected 2 meters away from COVID-19 patients (n=8), before admission, and on hospital days 3, 5, and 7 using a MD8 Airport Portable Air Sampler. Some patients were housed in negative pressure rooms (e.g. AIIR). RNA was measured by RT-PCR.	All collected air samples were negative for viral RNA.
Ong (2020) (93) Biological monitoring study	Air samples were collected from COVID-19 patients (n=3) in AIIR at a dedicated SARS-CoV-2	No air samples were positive for SARS-CoV-2 viral RNA.

Singapore Jan-Feb 2020	outbreak center between day 4 and day 11 from symptom onset using SKC Universal pumps a Sartorius MD8 microbiological sampler. RNA was measured using RT-PCR.	
Ma (2020) (51) *Preprint* Biological monitoring study China Spring 2020* Note: Additional results on viral RNA in exhaled breath samples and community setting air samples are summarized in Table 4 and Table 6.	Air samples (n=26) were collected from hospital settings and unventilated quarantine hotel rooms of cases using a robot. RNA was detected by RT-PCR.	No air samples from hospital settings were positive for SARS-CoV-2 viral RNA.

Table 6: Biological monitoring studies investigating SARS-CoV-2 within air in community settings (n=9)

SARS-CoV-2 in cell culture samples		
Lednicky (2021) (23) *Preprint* Biological monitoring study USA Jan 2021* *new*	Air samples were collected from a car driven by a COVID-19 patient (mildly symptomatic, no cough) using a Sioutas personal cascade impactor sampler at multiple sampling stages of aerosol sizes (PCIS); the sampler was attached to the sun-visor on the passenger side of the car and approximately 3 feet from the subject's face. The air conditioner in the car was on during the 15 minute long drive.	SARS-CoV-2 viral RNA was detectable at all PCIS aerosol size sample stages, at concentrations ranging from 1.24E+03 to 3.14E+04 genome/ m^3 of air. These findings suggest virions are present in different sized respiratory secretions. SARS-CoV-2 was cultured from the sampling stages collecting particles in the 0.25 to 0.50μm size range.

	SARS-CoV-2 RNA was detected by RT-PCR, virus viability measured by Vero E6 cell culture, as well as genome sequencing.	
SARS-CoV-2 RNA in samples		
Munoz-Price (2021) (24) Biological monitoring study US Spring 2021* *new* Note: Additional results on viral RNA in environmental air from patient care settings are summarized in Table 5.	Air samples (n=9) collected from households occupied by confirmed COVID-19 cases. Air samples were collected using the Sartorius MD8 airscan sampler, positioned at 0.3 -1.8 meters from patients' head. Viral RNA in samples was measured by RT-PCR.	55% (n=5/9) of air samples, collected from three different households, were positive for viral RNA. The odds of positive air samples in household settings, when compared to hospital settings, were estimated to be 8.75 [95% CI 1.21–63.43; P = .058]. The median number of days from the last positive SARS-CoV-2 test to the day of air sampling was 3 (range, 2.5–5). Of the households with positive air samples, one had A/C running and all three had opened windows or doors immediately prior to air sampling. Anecdotally, most households felt warm and humid at the time of sample collection.
Gehrke (2021) (61) *Preprint* Biological monitoring study Germany Oct 2020 - Jan 2021 *new* Note: Additional results on viral RNA in hospital settings air samples are summarized in Table 5.	Air samples were collected from a concert hall and a shopping mall for 6 hours during operation using non-powered cold traps. Viral RNA was quantified by RT-PCR in an area with high community transmission in an effort to identify potential hotspots for transmission.	Indoor COVID-19 hotspots were found in non-ventilated areas and in zones that are predisposed to a buoyancy (chimney) effect. In the concert hall, 1/10 cold traps were positive for viral RNA. In the shopping mall, 35% of traps were positive for viral RNA (n=5/14) located on the ground floor, 2nd and 3rd kiosk area as well as around the escalators. The 4th floor fashion section that usually has 25% capacity was negative. The highest viral concentration (2.7-5.4 x10^3 copies/mL) was found on the ground level between the escalators. However, follow-up measurements where cold

		traps were placed directly under 2 inflows and 2 outflows on the 3rd floor (to exclude any contamination of the central ventilation system) were negative. Samples taken on Friday with a high volume of patrons were twice as high as those taken on Monday.
Moreno (2021) (69) Biological monitoring study Spain May- Jul 2020 *new*	Air samples were collected from subway trains and buses during operation. Ambient air ($PM_{2.5}$) was sampled using Teflon filters with PEM (Personal Environmental Monitor) equipment, A/C filters were also sampled. Viral RNA in samples was measured by RT-PCR.	2/6 subway train air samples were SARS-CoV-2 positive and none of the air conditioner filter samples were positive. 1/6 bus air samples and 4/9 air-conditioning filters were positive. Cleaning and disinfection results indicated this process was successful at decontamination.
de Rooij (2021) (66) *Preprint* Biological monitoring study Netherlands Apr-Jun 2020 *new*	Air samples were collected from mink farms with ongoing COVID-19 outbreaks (3 farms at late stage of outbreak, 1 at early stage of outbreak). Samples were collected from indoor farm environments, outdoors at the farm premises, and nearby residential sites. Air samples were collected using teflon filters, and in parallel with particulate size fraction PM_{10} (<10μm) and inhalable dust (<100μm) collection. Personal air samples from the investigation field staff were also collected. Viral contamination in air samples was measured by RT-PCR.	Based on sample contamination the investigators conclude mink farms to be highly contaminated with viral RNA inside but the dispersion of virus outdoors and to nearby areas to be negligible. Farm in acute stage of outbreak: - SARS-CoV-2 RNA was detected in 62.5% (n=5/8) of the inhalable dust samples and 50% (n=4/8) of PM_{10} samples collected inside the farm. All (n=2) personal air samples were positive for viral RNA. - SARS-CoV-2 RNA was also detected in outdoor samples at 1.5-10 meters from the farm's open entrance, but samples collected at 20m from this entrance were negative. Farms in late stage of outbreak:

		- Viral RNA was detected in 9.8% (n=4/41) of inhalable dust samples, at ~$4x10^3$ copies/m^3. SARS-CoV-2 RNA was not detected in the inhalable dust samples collected outside the mink houses (n=9) or from the PM_{10} samples collected inside the farm (n=9) or near the mink houses (n=9). One of the personal air samples was positive for SARS-CoV-2 RNA. - All of air samples from residential sites were negative for SARS-CoV-2 RNA.
Ma (2020) (51) *Preprint* Biological monitoring study China Spring 2020* Note: Additional results on viral RNA in exhaled breath samples and hospital settings air samples are summarized in Table 4 and Table 5.	Air samples (n=26) were collected from hospital settings and unventilated quarantine hotel rooms of cases using a robot. RNA was detected by RT-PCR.	A single positive air sample (3.8%) was identified in an unventilated quarantine hotel toilet room.
NO SARS-CoV-2 RNA in samples		
Wong (2020) (67) *Preprint* Biological monitoring study Singapore Feb-Mar 2020	Air samples (n=6) were collected from accommodation rooms, corridors, toilets and elevators used by COVID-19 cases in community settings (not specified). Viral RNA in samples was measured by RT-PCR.	All air samples were negative for viral RNA.

new		
Döhal (2020) (68) *Preprint* Biological monitoring study Germany Mar 2020 *new*	Environmental air from 21 quarantine households (n=15) were collected by cyclone sampling using a Coriolis 154 Micro Air sampler. Viral RNA in samples was measured by RT-PCR and Vero-E6 cell culture. Note: At least one person in each included household was positive for SARS-CoV-2 at the time of sample collection.	All air samples were negative for viral RNA.
Di Carlo (2020) (94) Biological monitoring study Italy May 2020 *new*	Samples were collected on a city bus in a town which had a high number of COVID-19 cases, during the last week of lockdown and first week of gradual opening (approx. 1100 passengers used the bus during the study period). Air was sampled using microbiological gelatin membrane sample filters of 80 mm. Viral RNA in samples was measured by RT-PCR.	No air samples (or surface samples) were positive for SARS-CoV-2. Public health measures in place included hand sanitized upon entry to the bus, mandatory masks and keeping the bus windows open. Authors state these precautions prevented SARS-CoV-2 circulation and detection in the investigation.

*Estimated based on author affiliations and publication date.

SARS-COV-2 VIRAL LOADS IN RESPIRATORY PARTICLES

A systematic review and meta-analysis informed a model to estimate the relationship between viable SARS-CoV-2 virus, case viral loads, and virus laden droplet and aerosol emission (55). This review found that peak viral load occurred between one day before to five days post symptom onset (55). The model estimated the likelihood of viable virus in respiratory aerosols expelled by an individual at peak viral load was ≤61.1% (95% CI: 51.8-70.4%), and the likelihood estimate was substantially lower, at ≤ 0.69% (95% CI: 0.43-0.95%), for an individual with a mean viral load.

Table 7: SARS-CoV-2 viral load in respiratory particles (n=1)

STUDY	METHOD	KEY OUTCOMES
Chen (2020) (55) *Preprint* Systematic Review informed *in-silico* analysis Canada* Aug 2020	A systematic review and meta-analysis were conducted (Aug 2020) to developed a dataset and summarize data on SARS-CoV-2 respiratory viral load (rVL). A model was developed to estimate the likelihood of respiratory droplets and aerosols containing viable virus assuming different viral load estimates, and different activities.	The meta-analysis showed there was a large degree of heterogeneity in viral loads across individuals, studies, and stages of infection. This suggests intrinsic virological factors mediate the over dispersion seen in the pandemic. Many cases present minimal transmission risk, whereas highly infectious individuals were estimated to shed 9.84 (95% CI 9.17-10.56,) $\log_{10}$ SARS-CoV-2 virions/ml via droplets and aerosols while breathing, talking and singing. The model estimates coughing increased the contagiousness of symptomatic cases. The likelihood of viable virus in respiratory aerosols at peak viral load was estimated to be ≤61.1% (95% CI: 51.8-70.4%) for the most infectious cases, and ≤ 0.69% (95% CI: 0.43-0.95%) for cases with mean viral load.

*Estimated based on author affiliations and publication date.

Methods:

A daily scan of the literature (published and pre-published) is conducted by the Emerging Science Group, PHAC. The scan has compiled COVID-19 literature since the beginning of the outbreak and is updated daily. Searches to retrieve relevant COVID-19 literature are conducted in Pubmed, Scopus, BioRxiv, MedRxiv, ArXiv, SSRN, Research Square and cross-referenced with the literature on the WHO COVID literature list, and COVID-19 information centers run by Lancet, BMJ, Elsevier and Wiley. The daily summary and full scan results are maintained in a Refworks database and an excel list that can be searched. Targeted keyword searching is conducted within the COVID-19 database to identify relevant citations using search terms: aerosol, airborne, droplet.

Each potentially relevant citation was examined for relevance, the full text of potentially relevant research was examined to confirm relevance and a synopsis of the study was extracted into the review. This review contains research published up to March 12, 2020.

Peer-review

This document underwent peer-review by a subject matter expert, and editorial and science to policy review by the Office of the Chief Science Officer.

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Section F

Unions knowledge of the ongoing negligence and their refusal to alert the public and their own members to it

1

Canadian Federation of Nurses Union report titled A Time of Fear How Canada Failed Our Health Care Workers and Mismanaged COVID-19. This report was written by lead SARS investigator Mario Possamai and made public plus provided to the government in September 2020. This report explains how healthcare workers were not properly informed of the dangers in the workplace, how the government failed in their duty to protect workers, that elastomeric respirators were more protective and more comfortable than N95s plus how elastomeric respirators should be put into widespread use to stop the harm being done to healthcare workers by not using proper PPE.

Source: https://www.atimeoffear.com/download

2

Canadian Federation of Nurses Union position statement last updated July 16, 2021. The union explains that healthcare workers should be provided elastomeric instead of N95s since they offer better protection. The union also says the government should acquire a supply of elastomeric respirators for healthcare workers.

Source: https://nursesunions.ca/wp-content/uploads/2021/07/2021-07-16_CFNU-Position-Statement_COVID-19_EN.pdf

3

OCHU/CUPE and SEIU Healthcare letter from January 24, 2022 to Doug Ford, Christine Elliot, Kieran Moore and Anthony Dale explaining surgical masks don't work well to prevent transmission from healthcare workers to patients. These unions ask that instead of N95s, healthcare workers should be given elastomeric respirators instead of since they offer superior protection.

Source: https://seiuhealthcare.ca/letter-to-the-ford-government-responding-to-the-covid-19-interim-guidance/

4

Ontario Federation of Labour letter from April 14, 2021 to Doug Ford, Christine Elliot and Monte McNaughton that no healthcare or essential workers should be denied access to N95s or elastomeric respirators.

Source: https://ofl.ca/wp-content/uploads/20210414OLETGOVCOVID19PREVENTION-COPE.pdf

5

October 3, 2021 tweet from RNAO CEO Doris Grinspun about a mask classification system Nicolas Smit created to help people easily understand the protection each type of mask offers from droplet transmission as well as airborne transmission for both the person wearing the mask as well as those around the wearer

Source: https://twitter.com/DorisGrinspun/status/1444795414583066624?s=20&t=SG4nJwPohPNkAuMv7ananA

1

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Source: https://www.atimeoffear.com/download

A Time of Fear

How Canada failed our health care workers and mismanaged COVID-19

Mario Possamai

All sectors (community, acute and long-term care)

- Respect and enforce the health and safety rights of workers.
- Ensure workers have the right to participate in decisions that could affect their health and safety.
- Ensure workers have the right to know about the hazards in their workplace and receive the training they need to be able to do their jobs safely.
- Ensure workers have the right to refuse work that could endanger their health and safety or that of others.
- That the right of health care workers to speak out about unsafe working conditions be protected from retaliation by their employers.
- Ensure adequate supplies of personal protective equipment (PPE), including N95 respirators or better (e.g., elastomeric respirators), and that workers and essential family visitors have access to appropriate PPE.
- Recognizing that while sufficiently protective, N95s have their drawbacks, including comfort, the federal and provincial governments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like elastomerics, that protects at the same level or better than N95s, and that, evidence suggests, may have comfort and cost advantages.
- Provide hands-on training on infection prevention and control, including training testing and drilling workers on donning, doffing, safe use and limitations of PPE – for all workers and essential family visitors working in and entering long-term care homes.

unsafe use of N95s by personnel who had not been properly trained or fit-tested. In one report, military medical staff observed the following at one facility: "[...] surgical mask under N95, scarves under mask [...]". At another, they observed: [...] N95s provided to staff without fit-test."[97]

The precautionary principle: shortages of supplies

Justice Campbell was acutely aware that in order to implement the precautionary principle during a major outbreak, sufficient supplies of N95 respirators, or better, are required.

We use the term "or better" in this report because N95 respirators, while in wide use in health care, are not the be-all and end-all in respiratory protection. There are alternatives that provide the same or higher protections. Examples are elastomeric respirators, reusable devices with exchangeable cartridge filters, and powered air-purifying respirators (PAPR), which use a battery-powered fan to blow air through a filter to a hood or face piece. More will be said on these alternatives later in this report.

During SARS, there were shortages of N95s from the moment that Ontario required all health care workers to wear them.

Since Canada did not have any domestic production supply of N95s during SARS (and still did not have at the start of COVID-19), Ontario scrambled to buy as many as it could.

One SARS response leader told the SARS Commission: "The decision was made to buy every N95 in North America. We bought out the market by the weekend."[98]

Despite these efforts, N95 shortages persisted during SARS.

An article published in *The Lancet* medical journal written shortly after SARS noted:

> *"With 211 hospitals in Ontario alone requiring these supplies, Canadian suppliers rapidly ran out of stock. There was not pre-existing supply stockpile, and our mask suppliers were obtained from foreign manufacturers."*[99]

Ontario was fortunate because, unlike during COVID-19, SARS did not affect the United States, and thus American N95 supplies were not needed domestically.

The authors added:

> *"Because SARS was a worldwide threat, there was great difficulty in acquiring masks from other countries, since foreign governments understandably wanted to keep such supplies for their own citizens."*[100]

Recognizing these supply chain issues, Justice Campbell highlighted the importance of sufficient supplies of protective equipment:

> *"SARS not only underlined the importance of having an effective emergency management structure, it also emphasized the need to have sufficient quantities of medical supplies, secure supply chains and the means to distribute the supplies."*[101]

To ensure there were sufficient supplies of N95s and other protective equipment, Justice Campbell recommended:

> *"Measures resulting from advance planning require resources of people and equipment. Examples are surge capacity for human resources and medical equipment such as*

In late January 2020, Quebec's Chief Medical Officer of Health, Dr. Horacio Arruda, seemed unaware of his province's lack of preparedness. He confidently predicted that his province was ready to deal with COVID-19, having learned its lessons from SARS, saying: "Our network of health is ready to detect and to treat."[324]

Quebec subsequently became the epicenter of COVID-19 in Canada, accounting for close to half of all the country's COVID-19 cases. Amid dire shortages of PPE, including N95s, health care workers comprised about one in four Quebec cases.[325]

In an admission of his province's pandemic preparedness failure, Quebec Premier François Legault said, "nobody anticipated we would use so many [N95s] so fast. There is a race for protective equipment. We are all in the same situation."[326]

Even British Columbia's highly regarded CMOH, Dr. Bonnie Henry seems to have been caught off-guard by her province's lack of preparedness.

The Breaker News reported:

> *"On March 23, she [Dr. Henry] said she was unaware of PPE shortages in B.C. Just two days later, on March 25, a 180-degree pivot: Henry revealed that hospitals were "going through way more personal protective equipment than we expected, so we are on a tenuous level."*[327]

While shortages of N95s are expected to persist into the fall and winter, some health worker safety experts have wondered why so little effort has been made by federal and provincial public health agencies to consider reusable alternatives like elastomeric respirators. Equipped with replaceable cartridges, some are more protective than N95s and are said by some wearers to be more comfortable. Not only are they readily available, but they may also be more cost-effective than N95s.[328] [329]

As Dr. Lisa Brosseau, a respiratory protection and infectious diseases scientist at the University of Illinois, Chicago, noted:

> *"The elastomeric material and design fit much better against your face," and they are cleanable and washable. "Especially in pandemic situations, why not give everyone an elastomeric respirator, fit-test them, and they'll have it forever?"*[330]

In the early days of the pandemic, there appears to have been no governmental efforts to acquire supplies of N95s already in the Canadian wholesale and retail systems.

In late January 2020, drug stores and medical supply wholesalers began reporting that N95 respirators and other supplies were rapidly selling out.

The experience of a major wholesaler in Toronto was typical. A senior official said that in early January there was a two-to-thre-hour line-up outside his Toronto-area office. Ontarians with family in China were evidently buying up N95 respirators by the crate to send to family and contacts in China. The wholesaler said provincial health bodies did not start calling until March, but the shelves were long since bare.[331]

By March 2020, the situation had become so dire – and the lack of urgent government attention so worrying – that a group of volunteers began doing what provincial governments should have been doing from the dawn of COVID-19.

CMOHs in public health risk communication, we thus recommend that:

- Federal and provincial chief medical officers of health be statutorily required, on an annual basis, to report to their respective legislatures, and to the public that they're mandated to protect, on the state of their jurisdiction's public health emergency preparedness, and make recommendations on addressing any shortcomings. The preparation of this report should reflect the concerns and perspectives of health worker unions and safety experts.
- The reports of the CMOHs be required to go to a standing committee of their respective legislatures, which will hold annual hearings into the report and related issues.
- Chief medical officers of health be statutorily required to consider and apply the precautionary principle in assessing their jurisdiction's public health emergency preparedness, thus ensuring that their health care workers are protected at a precautionary level.
- Chief medical officers of health be given the statutory independence – in jurisdictions where they do not have this right – to speak publicly on vital issues like pandemic preparedness without fear of political interference or retribution.
- Qualified outside auditors with sufficient expertise and resources independently audit, on a biannual basis, CMOHs' preparedness resources and their statutory declarations on pandemic preparedness, and publicly report their findings. These auditors should be required to have advisory committees of health care worker unions and worker safety experts.
- Guidance on the safety of health care workers be made on a precautionary basis by workplace regulators, health care worker unions and worker safety experts working collaboratively, and that those decisions form the basis of health worker safety guidance issued by public health agencies.

Personal protective equipment

We will never know how many of the more than 21,000 Canadian health care workers infected with COVID-19 might have been kept safe had there been sufficient stockpiles at a precautionary level. What we do know, as outlined earlier in this report, is that jurisdictions like China, Hong Kong and Taiwan, that took a precautionary approach to worker safety, have significantly lower levels of health worker infections.

The PPE supply shortcomings exposed by COVID-19 need to be addressed on an urgent basis.

- The precautionary principle should be the primary driver in setting and properly maintaining levels of personal protective equipment in national and provincial stockpiles. Stockpiles should be set and maintained at levels that ensure that all health care workers are protected at an airborne level.
- Building on its contracts with 3M and Medicom to produce N95 in Canada, the federal government should ensure that Canada has sufficient domestic production capability to protect health care workers at a precautionary level.
- Recognizing that while sufficiently protective, N95s have their drawbacks, including comfort, the federal and provincial govern-

ments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like elastomeric respirators, that protect at the same level or better than N95s, and that, evidence suggests, may have comfort and cost advantages.

- With regards to efficiently and cost-effectively maintaining stockpiles of PPE, governments may want to consider Taiwan's three-tier stockpiling framework. It has proven its ability during COVID-19 to optimize the PPE stockpiling efficiency, including through regular cycles of refreshing, ensure a minimum stockpile, use the government's limited funds more effectively, and achieve the goal of sustainable management.[348]
- Governments and public health agencies be open and transparent on levels of PPE stockpiles.

professional with occupational health and safety training. Require that professional to provide quarterly publicly accessible assessments of the state of infection control and occupational health and safety at their facility.

- Ensure that relevant workplace regulators conduct in-person proactive inspections of all long-term care facilities to ensure compliance with occupational health and safety laws, regulations and best practices.

- On an urgent basis, ensure that all health care workers in the long-term sector are properly trained and fit-tested on the use of N95 respirators and other protective equipment.

- Respect and enforce the health and safety rights of workers:

    - Ensure adequate supply of personal protective equipment (PPE), including N95 and better (e.g., elastomeric respirators), and that workers and essential family visitors have access to appropriate PPE.

    - Ensure workers have the right to know about the hazards in their workplace and receive the training they need to be able to do their jobs safely.

    - Ensure workers have the right to participate in decisions that could affect their health and safety.

    - Ensure workers have the right to refuse work that could endanger their health and safety or that of others.

    - Provide hands-on training on infection prevention and control, including training testing and drilling workers on donning, doffing, safe use and limitations of PPE – for all workers and essential family visitors working in and entering long-term care homes.

- Ensure that provincial labour ministries have the resources and ability to act independently from provincial health ministries and fully enforce occupational health and safety laws.

Hong Kong, all long-term care facilities conduct emergency exercises every year to coincide with the advent of flu season to ensure infection control measures and resources are in an acceptable operational state.

- Because systemic infrastructure shortcomings limit the ability of many long-term care facilities to isolate COVID-19 cases, it is vital that on an urgent basis separate emergency isolation facilities be created, resourced and staffed. This would permit COVID-19 cases to be transferred out of long-term care facilities that are unable to isolate them.
- Ensure that any surge in COVID-19 hospitalizations does not result in shifting patients to already overburdened, under-resourced and understaffed long-term care facilities, which may be unable to isolate new admissions.
- Reflecting a best practice developed in the U.S., consider establishing, where space and resources permit, a cohort unit for exposed and new admissions as an effective way to separate and screen higher-risk individuals for the 14-day incubation period. Keeping these patients on isolation and with dedicated staff would make contact tracing for exposure identification easier.
- Ensure that all long-term care facilities are staffed by a dedicated infection control professional with occupational health and safety training. Require that professional to provide quarterly publicly accessible assessments of the state of infection control and occupational health and safety at their facility.
- Ensure that relevant workplace regulators conduct in-person proactive inspections of all long-term facilities to ensure compliance with occupational health and safety laws, regulations and best practices.
- On an urgent basis, ensure that all health care workers in the long-term care sector are properly trained and fit-tested on the use of N95 respirators and other protective equipment.

All sectors (community, acute and long-term care)

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Canadian Federation of Nurses Union position statement last updated July 16, 2021. The union explains that healthcare workers should be provided elastomeric instead of N95s since they offer better protection. The union also says the government should acquire a supply of elastomeric respirators for healthcare workers.

Source: https://nursesunions.ca/wp-content/uploads/2021/07/2021-07-16_CFNU-Position-Statement_COVID-19_EN.pdf

CANADIAN FEDERATION
OF NURSES UNIONS
LA FÉDÉRATION CANADIENNE
DES SYNDICATS D'INFIRMIÈRES
ET INFIRMIERS

POSITION STATEMENT

UPDATED JULY 16, 2021

Safety Is Not Negotiable
Pandemic Preparedness – the Coronavirus 2019 (COVID-19)

> *When it comes to worker safety in hospitals, we should not be driven by the scientific dogma of yesterday or even the scientific dogma of today. We should be driven by the precautionary principle that reasonable steps to reduce risk should not await scientific certainty. Until this **precautionary principle** is fully recognized, mandated and enforced in Ontario's hospitals, workers will continue to be at risk.*
>
> **Justice Campbell, Chair of the SARS Commission**

INTRODUCTION

New evidence and information on COVID-19 is emerging daily, and CFNU's recommendations remain based on science and occupational health and safety legislation and principles, including the precautionary principle.

As well, the occupational health and safety principle of the hierarchy of controls applies. It starts with eliminating the hazard whenever possible. When that cannot be accomplished, a combination of engineering and administrative controls, combined with appropriate personal protective equipment, must be applied. The system is called a hierarchy because you must apply each level in the order that they fall in the list; a systematic comprehensive and integrated approach must be taken to reducing hazards; a hierarchy of controls cannot be applied in a piecemeal fashion.

It is incumbent upon federal/provincial/ territorial governments and employers to provide appropriate protection to health care workers, and to take a leadership role on infection prevention and control in health care settings.

The federal government has committed to procuring and allocating the necessary PPE to provinces, including fit-tested NIOSH-approved N95 respirators.

The Public Health Agency of Canada (PHAC)[1], the Centers for Disease Control and Prevention (CDC)[2] and the World Health Organization (WHO)[3] have now formally acknowledged that one of the main routes of transmission for COVID-19 is from infected individuals, who spread the virus through both large and small fine respiratory droplets as well as aerosol particles generated when they cough, shout, talk, sing or breathe, and that aerosolized particles may linger in the air and be inhaled. In light of this fact, governments and employers must secure respiratory protection (fit-tested N95 respirators or better) so as to protect health care workers caring for presumed and confirmed cases of COVID-19.

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[1] Public Health Agency of Canada. (2020, November 3). COVID-19: main modes of transmission. Retrieved from https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/main-modes-transmission.html

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Examples of engineering controls: plexiglas barriers; sufficient and effective ventilation systems with appropriate air change per hour, and air cleaners;[4] designated COVID-19 units, negative pressure rooms; private rooms with private toilet and patient sink; designated hand washing sinks for HCW use.

Examples of administrative controls: employers' pandemic plan; active screening protocols; respiratory protection program; enhanced environmental cleaning; application of precautions (droplet and aerosol (small droplets and particles which linger in the air), contact, airborne); safe patient transportation policies; training, testing and drilling; education, surveillance and auditing practices; visitor restriction and protection policies; policies on procuring, supplying and accessibility of adequate and appropriate PPE; provincial/territorial and federal guidance and directives to adequately protect workers from the risk of inhaling the virus via the aerosol/airborne route.

Examples of PPE: fit-tested NIOSH-approved N95 respirators or better (e.g., reusable elastomeric respirators) for workers at risk of exposure to a suspected or confirmed COVID-19 patient/resident/client, with an adequate and accessible supply (along with training on how to don and doff respirators); gloves, impermeable gowns, medical masks, full face shields or goggles, hair and foot coverings.

THE EVIDENCE

According to the Canadian Institute for Health Information (CIHI), the number of health care worker infections tripled from July 2020 to mid-January 2021 and reached 65,920, comprising 9.5% of total cases in Canada[5]. As of July 2021, Statistics Canada reported that about 100,000 Canadian health care workers had been infected with COVID-19 (where occupation code was provided)[6]. Over 50 health care workers have now died from COVID-19 in Canada.[7]

As the CFNU detailed in its 2020 report by Mario Possamai, *A Time of Fear: How Canada failed our health care workers and mismanaged COVID-19*, other countries fared much better because they learned from the SARS epidemic in 2003. In July 2020, after the COVID-19 first wave, China's infection rate for health care workers stood at 4.4% of the national total, while

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[4] U.S. EPA. Air cleaners, HVAC filters and Coronavirus (COVID-19). Retrieved from https://www.epa.gov/coronavirus/air-cleaners-hvac-filters-and-coronavirus-covid-19#:~:text=Portable%20air%20cleaners%20and%20HVAC,virus%20that%20causes%20COVID%2D19

[5] CIHI. (2021, January 15). Cases and deaths in health care workers in Canada. Retrieved from https://www.cihi.ca/en/covid-19-cases-and-deaths-in-health-care-workers-in-canada-infographic

[6] Statistics Canada. (July 9, 2021, release). Preliminary dataset on confirmed cases of COVID-19, PHAC. Retrieved from https://www150.statcan.gc.ca/n1/en/catalogue/13260003

[7] CFNU. In Memoriam: Canada's health workers who have died of COVID-19. Retrieved from https://nursesunions.ca/covid-memoriam/

Taiwan and Hong Kong had infections of health care workers that remained in the single digits because they chose to protect health care workers with respiratory protection (N95 respirators).[8]

A 2021 study from the UK, examining the efficacy of surgical masks versus face filtering pieces, such as N95 respiratory masks, confirms Possamai's conclusion that introducing N95 respirators in China significantly reduced the country's infection rate among health care workers. According to the UK study, "Upgrading face masks to filtering face piece (FFP3) respirators for healthcare workers on covid-19 wards produced a dramatic reduction in hospital acquired SARS-CoV-2 infections, according to research carried out at Addenbrooke's Hospital in Cambridge."[9]

It is unacceptable that so many health care workers have gotten sick and died. It is also apparent that measures taken to protect workers, including the personal protective equipment provided, are not sufficient or appropriate.

Aerosol Transmission of COVID-19

Since January 2020, the Canadian Federation of Nurses Unions and its Member Organizations have documented the potential risk of aerosol transmission of COVID-19, and urged that the precautionary principle be applied in order to protect health care workers from contracting the virus. As the evidence has mounted with respect to COVID-19 being spread in the air, many experts now consider close-range aerosol transmission the dominant mode of transmission.[10]

In November 2020, the Public Health Agency of Canada confirmed that close-range aerosol transmission of COVID-19 occurs. According to the PHAC, when a person infected with COVID-19 coughs, sneezes, sings, shouts or talks, small aerosolized droplets or particles called aerosols can linger in the air and potentially be inhaled into the nose, mouth, airways and lungs of those in the room. The PHAC recognizes the virus is spread most commonly amongst those in close contact within indoor environments, and one can become infected from someone with or without symptoms. The PHAC also notes the importance of adequate and appropriate ventilation in order to decrease the concentration of aerosols that may be suspended in the air in the room and to reduce the chances of SARS-CoV-2 spread, if those aerosols contain the virus.[11]

In a May 2021 scientific brief[12], the CDC acknowledged the significance of close-contact "inhalation of air carrying very small fine droplets and aerosol particles that contain infectious virus", noting that the risk of contracting the virus was greatest within 3 to 6 feet of an infectious source where the concentration of particles was likely to be greatest. In the same update, the CDC recognized the potential for aerosol particles to spread farther than 6 feet, remaining in the air for minutes to hours, under certain circumstances such as within enclosed spaces with inadequate ventilation.

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[8] Possamai, M. (2020). *A Time of Fear*. Retrieved from https://www.atimeoffear.com/

[9] Wise, J. (2021, July 29). COVID-19: Upgrading to FFP3 respirators cuts infection risks, research finds. *BMJ*. Retrieved from https://www.bmj.com/content/373/bmj.n1663

[10] CFNU. Research Summary on COVID-19. Retrieved from https://nursesunions.ca/cfnu-research-summary-on-covid-19/

[11] The Public Health Agency of Canada (2020, November 3). COVID-19: Main modes of transmission. Retrieved from https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/main-modes-transmission.html

[12] Centers for Disease Control and Prevention (CDC). (2021, May 7). Scientific Brief: SARS COV-2 Transmission. Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/sars-cov-2-transmission.html

Similarly, on April 30, 2021, the World Health Organization updated its transmission guidance[13] to formally acknowledge the SARS CoV-2 virus could be carried in the air.

POSITION

It is the position of the Canadian Federation of Nurses Unions (CFNU) that, in the event of an outbreak of any new respiratory virus, we acknowledge that the required and best respiratory protection for health care workers at risk is, **minimally, fit-tested NIOSH-approved N95 respirators or higher levels of protection (e.g., powered air-purifying respirators (PAPR) or elastomeric respirators), given the emerging science, occupational health and safety legislation, and the precautionary principle.**

Failure to institute the precautionary principle throughout the health care system, including in acute and long-term care facilities, home and community care, has resulted in nurses and other health care workers becoming vectors spreading the disease to each other and their patients, residents, clients or families. For infection and prevention control measures to be effectively implemented, the hierarchy of controls, as described above, must be implemented throughout the organization, in conjunction with joint health and safety committees that include direct care providers (including nurses) and their unions.

Based on an organizational infectious disease risk assessment, all nurses and frontline health care workers at risk in their area of work, or any area they may have to work in, with the potential for exposure, and/or who are caring for a suspected or confirmed COVID-19 patient, should be provided, fitted for and have unfettered access to a NIOSH-approved N95 **or greater respirator (i.e., powered air-purifying respirator (PAPR), elastomeric respirator),** and be trained, tested and drilled by the employer to safely don and doff it. All PPE (gloves, impermeable/isolation gowns, medical masks, N95 respirators, and face and eye protection (such as full face shields or goggles) should be supplied in all patient/resident care areas and in adequate amounts, and stored so they are readily accessible at the point of care for all health care workers.

It is critical that employers recognize, promote and respect the importance of health care workers performing a point-of-care risk assessment (PCRA) before every client interaction, to determine the personal protective equipment (PPE) health care workers require for the patient, task and environment. **Guidance must make it clear that an employer cannot deny access to the necessary and appropriate PPE – regardless of the care/task being provided or undertaken – including fit-tested N95 respirators, if a health care worker determines that they are required.**

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[13] World Health Organization (WHO). (2021; updated April 30, 2021). Coronavirus disease (COVID-19): how is it transmitted? Retrieved from https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-how-is-it-transmitted

Universal Masking in Health Care Settings

Given the evidence of non-symptomatic transmission, health care workers and visitors should wear a medical mask at all times when in patient care areas in hospitals, long-term care facilities and community settings.

Patients/residents/clients who are able to comply should wear medical masks as a form of source control anywhere within the health care facility and within their homes or their rooms when health care workers request they don a mask.

Collection of Respiratory Specimens

Given the evidence of close-range aerosol transmission, the potential for non-symptomatic transmission, and the collection of a specimen from an anatomic region where viral loads may be higher, health care workers performing nasopharyngeal or throat swabs must be provided the ability to access fit-tested N95 respirators (or higher levels of protection) based on their PCRA (minimally, contact and droplet precautions must be in place) and be trained, tested and drilled in all PPE use.

Screening, Testing and Triage

For those workers involved in triage and screening and testing for COVID-19, ideally a floor-to-ceiling plexiglas barrier with a speaker phone would eliminate worker exposure to the hazard, if there is no further direct contact with a patient required. If the barrier is not in place and direct contact cannot be avoided, other administrative and engineering controls (such as disposable equipment, signage procedures, training, separate examination rooms and waiting area with adequate ventilation with appropriate air changes per hour throughout the facility) should be in place before direct contact with the patient. Workers must have the ability to access fit-tested N95 respirators based on their PCRA (minimally, contact and droplet precautions must be in place) and be trained, tested and drilled in all PPE use.

To reduce the spread of COVID-19 in health care facilities, emphasis must be placed on preventing the virus from entering the facility. Therefore, effective and comprehensive screening and testing programs for both visitors and staff entering all facilities must be in place.

Designated COVID-19 Units

Hospitals and long-term care residences must cohort and isolate patients with presumed or confirmed cases of COVID-19. This has been an effective infection prevention and control model used internationally.

Given the potential for non-AGMP aerosol spread of the virus, all workers caring for suspected or confirmed cases in designated COVID-19 units must be required to wear, minimally, fit-tested NIOSH-approved N95 respirators, if available, to prevent aerosol transmission of the virus. Head and foot protection, eye protection (i.e. full face shields or goggles), gloves, impermeable (or at least fluid-resistant) gowns must also be worn in these areas.

Aerosol-Generating Medical Procedures 'Hot Spots'

It is essential that airborne precautions and the use of fit-tested NIOSH-approved N95 respirators or preferably better (i.e. elastomeric respirators, powered air-purifying respirators (PAPRs)) be mandated at all times in clinical areas considered aerosol-generating medical procedures 'hot spots' (e.g.: intensive care units (ICU), emergency rooms, operating rooms, post-anaesthetic care units and trauma centres) that are managing COVID-19 patients. Where possible, AGMPs should take place in negative pressure rooms (or AIIR – airborne infection isolation rooms), or single-patient/resident rooms if an AIIR room is unavailable, and PAPRs should be used as respiratory protection for AGMP procedures.

Supply Issues

Upon producing evidence to the joint occupational health and safety committee of the employers' procurement attempts for all types of respiratory protection (fit-tested N95 respirators and reusable/cleanable respirators) from all vendors and from government – and as a last resort in the event of dire supply shortages of disposable N95 respirators – employers must notify and discuss alternative strategies to immediately address and resolve the supply issue with affected health care unions.

At a minimum, in this eventuality all employees must be equipped with personal protective equipment for contact and droplets precautions for suspected, presumed or confirmed cases of COVID-19, including gloves, eye protection (full face shield or goggles), isolation/ impermeable gowns, head and foot coverings, and medical masks, for which they must also be trained, tested and drilled in safe use.

The Critical Importance of Point-Of-Care Risk Assessment (PCRA)

Point-of-Care Risk Assessment is required to be completed by all health care workers for all interactions with patients/residents/clients.

Even in the event of supply issues, the point-of-care risk assessment (PCRA), an activity that is based on the individual nurses' professional judgment (i.e., knowledge, skills, reasoning and education) must determine the protective equipment a nurse is provided, and if it is inadequate – given the patient acuity, environment or other factors – nurses must be provided access to a higher level of PPE regardless of the care/task being undertaken. Guidance must make it clear that a health care worker cannot be denied appropriate protection as required by the PCRA.

Underlying the PCRA is the principle that individual health care workers are best positioned to determine the appropriate personal protective equipment (PPE) required based on the situation and their interactions with an individual patient. They do so by evaluating the likelihood of exposure to themselves or others based on a specific task, environment, conditions, interaction or patient. Among the factors that should be considered in the PCRA are: the potential for contamination of skin or clothing; exposure to blood, body fluids or respiratory secretions; the potential for inhaling contaminated air or aerosolized particles; the patient's ability or willingness to comply with infection control practices (e.g., wearing a medical mask); whether care requires very close contact or prolonged close contact; what engineering (i.e. appropriate ventilation/air changes per hour and air cleaners) and administration controls are in place; and whether the patient could require an aerosol-generating medical procedure at any point and/or is in an AGMP hot spot (e.g.: intensive care unit, emergency room, operating room, post-anesthetic care unit or trauma centre) that is managing COVID-19 patients. Personal protective equipment should be selected based on the potential for exposure in order to minimize the risk of exposure to HCWs, a specific patient or other patients in the environment.

The PCRA does not abdicate the employer, however, from their legal obligation to provide appropriate PPE and protect all workers adequately under the *Occupational Health and Safety Act*, as indicated below.

Precautionary Principle and OH&S Law

A legal opinion, posted by a leading Canadian law firm Osler, Hoskins & Harcourt LLP, recommends employers "benchmark to current best practices" and follow "appropriate precautionary measures": "Where there is conflicting evidence as to whether a certain precautionary measure is required or not, hospitals should adopt the elevated precautionary measure(s). Hospitals should be cognizant that it will be the hospital that will be legally liable for any failures to protect patients and staff from harm, even if hospitals have relied on federal, provincial or municipal government directives in establishing its own plans, policies and procedures."[14]

Similarly, Katherine Lippel, Distinguished Canada Research Chair in Occupational Health and Safety Law, argues that: "The precautionary principle that provides that prevention measures be put in place when scientific uncertainty prevails is intrinsic to OHS law."[15]

The legal ruling in Ontario from Justice Morgan in Ontario Nurses' Association v. Eatonville/Henley Place, 2020, and the Stout award have reinforced the importance of the point-of-care risk assessment and respecting nurses' professional and clinical judgement when determining what PPE is necessary: "Nurses must be provided with PPE, including N95 respirators if, in the nurses reasonably professional and clinical judgment, they determine such PPE is necessary."[16]

Employers' responsibilities are clearly laid out in provincial OH&S law: employers must work with joint OH&S committees on their pandemic plans, protocols and measures; provide training, testing and drilling for all employees on health and safety measures; establish a respiratory protection plan and provide fit-testing for N95 respirators or better to all employees who may need them as based on their areas of work or potential work responsibilities; and employers are also responsible for making PPE readily accessible and available to health care teams so they can do their jobs safely.

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[14] Retrieved from https://www.osler.com/en/resources/governance/2020/coronavirus-covid-19-lessons-learned-from-sars-a-guide-for-hospitals-and-employers

[15] Possamai, M. (2020). *A Time of Fear*. Retrieved from https://www.atimeoffear.com/

[16] Ibid.

It is our position that a pan-Canadian approach to emergency preparedness must incorporate the precautionary principle so that all nurses and health care workers across Canada have the same access to health and safety in their workplaces, including the same standard for personal protective equipment (PPE) and pandemic planning.

Effective infection control and health and safety strategies must incorporate a hierarchy of controls approach, as described above, developed and implemented throughout the organization, in conjunction with joint health & safety committees that include nurses and their unions.

If AT ANY TIME you feel that your employer is not following the OH&S laws and principles as outlined above, please contact your union immediately.

Nurses are expected to be prepared, 24 hours a day, to face any number of health emergencies. The ability to respond quickly and efficiently to emergencies is fundamental to the nursing profession. However, rapid response requires the support of many parts of the health care system. It requires emergency preparedness planning, proper administrative and engineering controls, the support of the administrators of the health system, as well as employers and governments to ensure the necessary protocols, measures, procedures, training and protective equipment that take into consideration risk and the precautionary principle.

For workers, we recognize the critical importance of the point-of-care risk assessment and that individual health care workers, using their knowledge, skills, judgement and education, are best positioned to determine the appropriate PPE required based on their interaction with an individual patient in a particular environment.

Questions or concerns? If you have any questions or concerns, please speak with your union or a member of your Joint Occupational Health & Safety Committee.

EMPLOYER'S CHECKLIST

- Consult the Joint Occupational Health & Safety Committee on all measures, procedures and training with respect to COVID-19.
- Review and update existing institutional pandemic plans, developed in conjunction with the joint OH&S committees, to ensure they include staffing, communication, education and training for staff with respect to pandemic preparedness plans and the health risks of the current emergency and/or pandemic situation.
- Ensure that workers have ready access to appropriate PPE, are regularly trained and fit-tested for the N95 respirator or better (at least biennially or in accordance with personnel changes) and regularly drilled in any potential hazards, including the reason for and use of protective equipment such as the N95 respirator or better (e.g., powered

air-purifying respirator (PAPR), elastomeric respirator), how to don and doff all equipment, and all safety protocols.

- It is essential to ensure that health care providers are fully trained, tested and drilled in the care provisions/protocols required during a pandemic, including conducting a point-of-care risk assessment before each interaction with a patient and/or the patient's environment to evaluate the likelihood of exposure to contact, droplet and/or aerosols in providing care and/or care procedures, equipment and treatment settings to determine the appropriate safe work practices.
- Conduct a comprehensive organizational risk assessment, including determining all points of potential entry (and how to restrict them using prominent signage and limiting access) and other points of potential exposure for workers (e.g., screening, triage, isolation rooms).
- Implement changes in policies, procedures, equipment and the environment to eliminate or minimize identified risks in accordance with a hierarchy of controls approach to hazards.
- Have in place relevant travel screening and worksite/unit exposure controls. Ensure that sufficient protective measures and equipment are in place for all screening locations at all entry points.
- Have in place suitable structural barriers (e.g., ceiling-to-floor plexiglas barriers at triage and registration), disposable equipment, separate examination rooms and waiting area.
- Secure an adequate supply of appropriate fit-tested N95 respirators or better (e.g., reusable elastomeric respirators), gloves, impermeable gowns, head and foot protection, full face shields or goggles, as well as PAPRs (for aerosol-generating medical procedures, e.g., intubation) and full body protection on hand.
- Have airborne infection isolation rooms (negative pressure rooms) available and prepared for immediate occupancy whenever possible.
- When a suspected patient is identified, implement isolation measures in a negative pressure room for those with symptoms and move patient immediately to this room, separate from other patients, with access to a dedicated washroom or commode, and ensure that only trained and properly equipped personnel (with appropriate PPE, including respirators) are assigned as care providers and to enter these rooms.
- Create dedicated teams of clinicians who are protected with and trained, tested and drilled in the use of proper personal protective equipment for COVID-19, including teams trained in the use of N95 respirators or better (e.g., elastomeric respirators) and PAPR, if available (for aerosol-generating procedures), donning and doffing protocols, who can care for both suspected and confirmed cases of COVID-19 on each shift.
- Ensure sufficient staffing is available to supplement nurses and other health workers who need to care for patients in isolation, and schedule work in a manner that allows for multiple rest periods and recovery periods, as well as implement systems for monitoring fatigue.
- Implement surge capacity protocols as needed.
- In the event of staff shortages, contingency plans for staffing must be drawn up in close cooperation with joint occupational health and safety committees and affected nurses' unions.
- In the event where staff are transferred between unit/sites, or there is a redeployment of staff, staff must be sufficiently orientated, trained and educated so they are effectively

prepared for work in the new unit/site, and the union shall also be notified of the transfer or redeployment.

- Implement enhanced cleaning protocols ensuring cleaners wear the appropriate PPE.
- Use disposable equipment whenever possible; non-disposable equipment should be dedicated to the patient.
- Undertake a review of the facility's ventilation to ensure that there are sufficient air changes to help mitigate the risk of aerosol transmission.

NURSE'S CHECKLIST

- Comply with existing workplace infection control policies and procedures.
- Stay home when you are ill.
- **Update your N95 respirator fit-testing and wear an N95 respirator, or better (e.g., elastomeric respirator), if there could be any risk of exposure to COVID-19.**
- Use required droplet, contact and additional airborne precautions such as (but not limited to): gloves, full face shields or goggles, impermeable gowns, N95 respirators, powered air-purifying respirators (PAPR) when available (for aerosol-generating medical procedures, e.g., intubation).
- Conduct a point-of-care risk assessment before each interaction with a patient and/or the patient's environment to evaluate the risk of exposure to contact and/or aerosol transmission in providing care and care procedures, equipment and treatment settings; at any time during this risk assessment nurses may request an increase in PPE.
- In the event that a nurse is transferred between units/sites or redeployed, and the nurse identifies the need for orientation, training or education, the nurse shall notify the employer.
- If you have any health conditions of concern when caring for COVID-19 presumed or confirmed cases, please consult your health care provider.
- Avoid touching your eyes, nose and mouth with hands to prevent self-contamination; clean hands before contact with any part of the body.
- Avoid contact between contaminated gloves/hands or equipment and the face, skin or clothing when removing PPE.
- Familiarize yourself with your collective agreement and legislation with respect to pandemic preparedness, occupational health and safety (OH&S) and the right to refuse dangerous work.
- **STOP if you do not have the required personal protective equipment or properly fitted respiratory protection, and/or have not been trained, drilled and tested in its care, use and limitations, and speak with your manager or supervisor; document the situation and copy your union and Joint OH&S Committee representative.**
- **REPORT any health and safety concerns, including gaps in adequate protocols and procedures and/or communications, inadequate ventilation, access to PPE, fit-testing and/or training or other health and safety concerns to your manager or supervisor, copying your Joint OH&S Committee and your union.**

3

OCHU/CUPE and SEIU Healthcare letter from January 24, 2022 to Doug Ford, Christine Elliot, Kieran Moore and Anthony Dale explaining surgical masks don't work well to prevent transmission from healthcare workers to patients. These unions ask that instead of N95s, healthcare workers should be given elastomeric respirators instead of since they offer superior protection.

Source: https://seiuhealthcare.ca/letter-to-the-ford-government-responding-to-the-covid-19-interim-guidance/

OCHU
ONTARIO COUNCIL OF HOSPITAL UNIONS
CUPE

SEIU Healthcare

January 24, 2022

Hon. Doug Ford, Premier of Ontario
Legislative Building
Queen's Park
Toronto, ON M7A 1A1

Hon. Christine Elliott
Deputy Premier and Minister of Health
5 – 777 Bay St.
Toronto, ON M7A 2J3

Anthony Dale, President and CEO
Ontario Hospital Association
200 Front Street West, Suite 2800
Toronto, ON M5V 3L1

Dr. Kieran Moore
Chief Medical Officer of Health
393 University Ave., 21st Floor
Toronto, ON M5G 2M2

Dear Premier Ford, Minister Elliot, Mr. Dale, and Dr. Moore:

We are respectively the Presidents of the Ontario Council of Hospital Unions/Canadian Union of Public Employees ("OCHU/CUPE") and the Service Employees International Union Heathcare ("SEIU"). Together, we represent some 100,000 healthcare workers at some 200 hospitals and long-term care facilities in Ontario.

We write to express our deep concern with the Province's January 13 guidance document entitled "Covid-19 Interim Guidance: Omicron Surge Management of Critical Staffing Shortages in Highest Risk Settings." The guidance document sets out a plan for addressing potential staffing shortages in hospitals and other high-risk settings, in which **health care employees may be ordered back to work while potentially sick and/or infectious with Covid-19**. This plan, in our view, creates an unacceptable level of risk for hospital patients, employees and by extension all Ontarians, who have every right to expect hospitals to serve as bulwarks against, not links in, the chain of transmission.

We draw your attention to the comments of Chief Medical Officer of Health for Canada that "the period of communicability" for Omicron is "no shorter than the other variants."

We also draw your attention to the fact that hundreds of Ontario patients have died from Covid that they contracted in hospital. Many of these deaths could certainly have been prevented with better infection control practices.

The Guidance document sets out three categories of staffing options, categorized according to escalating levels of risk. Under the "moderate" and "higher" risk options, Covid-19 positive employees may be returned to work with Covid-19 patients on or prior to day 7 of their 10-day isolation period, without a negative PCR or RAT test, and with ongoing symptoms (if such symptoms are "improving").

Shortening the isolation period for healthcare workers is misguided and dangerous, in light of growing evidence suggesting that those infected with Omicron may be infectious for longer (see "Covid-19: Peak of viral shedding is later with omicron variant, Japanese data suggests" at https://doi.org/10.1136/bmj.o89 and "Study of NBA Omicron Cases Finds Many Still Infectious After CDC-Recommended Self-Isoloation Period Ends" at https://www.forbes.com/sites/dereksaul/2022/01/15/study-of-nba-omicron-cases-finds-many-still-infectious-after-cdc-recommended-self-isolation-period-ends/?sh=fb680113948e).

We believe that returning an employee back to work while sick with Covid-19 imperils the health and safety not only of that employee's patients and colleagues, but of the employee themselves, by depriving them of the opportunity to recover from what can be a dangerous and deadly infection.

Moreover, contrary to what is assumed by this plan, the risk of infection is not eliminated by assigning Covid-19 positive employees to work with Covid-19 positive patients. The risk of re-infection remains, especially when there are different variants at play and when patients and the worker ill with Covid are in a physically weakened state.

While the Guidance document states that hospitals should utilize alternative staffing strategies to avoid or mitigate staffing shortages before proceeding with early return to work options, there is no requirement that they do so, nor are there any mechanisms for ensuring that they do so. Indeed, we are aware of at least many hospitals that have announced plans to proceed with an early return to work program without having first pursued all available alternatives such as offering enhanced premium pay, not terminating unvaccinated employees who are still working or redeploying staff from other work, other workplaces or other locations.

We respectfully ask that before employees who are Covid positive are returned to work, these alternatives must be fully deployed.

The Guidance document suggests "additional precautions" to be applied in the case of early return to work, such as not eating meals in a shared space. Again, there is no requirement or enforcement measure for this, and we are aware of hospitals that have not established separate eating, break or changing facilities for sick or infectious staff members. At a minimum, separate changing, eating, break facilities in a venue which does not share air supply with areas of the hospital where uninfected patients and staff are working is a prerequisite.

The Guidance document also addresses PPE and lists as a potentially acceptable option "a well-fitting medical mask." This completely disregards evidence that surgical masks are inadequate to prevent transmission of Omicron even in non-high-risk settings, and even amongst people who are not known to be sick or infectious. The document fails to recommend PPE appropriate to the situation of extreme risk that it contemplates. At a minimum, an elastomeric respirator, which has a higher rating than an N95 mask, must be standard for anyone returned to work who may still be contagious.

As you are aware, the Guidance document does not and cannot prevail over employers' obligations under the *Occupational Health and Safety Act,* nor does it trump orders made by medical officers of health under s. 22 of the *Health Protection and Promotion Act.*

In our view, any healthcare employer would be in breach of these fundamental obligations if they were to (a) require employees to return to work while sick and/or infectious with Covid; or (b) begin implementing any early return to work plan without having first explored all reasonable alternatives, and without adequate protections and precautions, including PPE.

OCHU/CUPE, SEIU and our member locals will be considering every legal avenue at our disposal, including under *OHSA,* through the grievance process, and through the courts, to ensure the safety of our members, hospital patients, and by extension, the broader public.

We urgently request an immediate meeting of all parties to this correspondence to discuss these vitally important concerns.

Sincerely,

Sharleen Stewart

Michael Hurley
President
The Ontario Council of Hospital Unions/CUPE

Sharleen Stewart
President
SEIU Healthcare

4

Ontario Federation of Labour letter from April 14, 2021 to Doug Ford, Christine Elliot and Monte McNaughton that no healthcare or essential workers should be denied access to N95s or elastomeric respirators.

Source: https://ofl.ca/wp-content/uploads/20210414OLETGOVCOVID19PREVENTION-COPE.pdf

PATTY COATES
President

AHMAD GAIED
Secretary-Treasurer

JANICE FOLK-DAWSON
Executive Vice-President

ONTARIO FEDERATION OF LABOUR

April 14, 2021

SENT VIA EMAIL

Hon. Doug Ford
Premier of Ontario
Legislative Building
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Hon. Christine Elliott
Minister of Health
Ministry of Health
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Toronto, ON M7A 2J3

Hon. Monte McNaughton
Minister of Labour
Ministry of Labour, Training and Skills Development
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Toronto, ON M7A 1T7

Dear Hon. Doug Ford, Hon. Christine Elliott, and Hon. Monte McNaughton,

Open Letter – A Call to Protect Ontario Workers from COVID-19

We are writing on behalf of organizations and Ontario unions representing over one million workers. This includes hundreds of thousands of workers who are at great risk of COVID-19 exposure. They include those in healthcare, education, first response, correctional institutions, group homes and homeless shelters, transportation, construction, manufacturing, and food processing.

We are calling on you to strengthen protections for all workers, at this vital time when we know that those who must go to work outside their homes every day are getting sick in greater numbers. Better protection for workers also means less transmission to their families and communities.

Our members have endured severe challenges and dangerous working conditions during this pandemic. Many got sick, thanks to inadequate prevention measures. Unfortunately, some died, while others have taken the infection back home to their families. Official figures indicate at least 20,000 Ontario health care workers have been infected so far. They also say the impacts have been very inequitable; in particular, women, racialized people, the disabled, and precariously employed individuals have borne the brunt. That is but one reason why paid sick days are so important.

We are very pleased to see that vaccinations are finally rolling out. They will make a tremendous difference, over time. On the other hand, the harsh reality is that the COVID-19 third wave is affecting more younger people, more seriously, with increased workplace connections to transmission. Without improved and maintained protections, the human and economic impact will be devastating. Prioritize frontline and essentials workers for vaccination.

As you know, experts around the world – including within Canada – have called for higher levels of worker protection because of aerosol transmission of the virus. This includes improved ventilation, air purification, and a higher level of PPE for those at the frontlines. These proposals and the supporting science are detailed in the letters released on January 4 and its follow-up on February 19. They echo the voices of thousands around the world from multiple disciplines, who all want an early end to this pandemic.

The proposals in the letters are practical and implementable. We call on you to take urgent action to implement these recommendations:

- Immediately update COVID-19 guidance to incorporate the important role of aerosol transmission of COVID-19 and the consequences for protecting workers.
- Promote understanding of:
    - Aerosol and airborne transmission.
    - The related effective preventive measures (e.g., improving ventilation, changing air filters, opening windows, wearing barrier face coverings or respirators).
    - The need to avoid the "3 C's" (crowded places, close-contact settings, and confined and enclosed spaces), especially in workplaces (e.g., fewer students in classrooms).
- Improve ventilation by:
    - Mandating and funding ventilation assessments and upgrades for workplaces and job sites, including essential public institutions such as schools and long-term care homes.
    - When ventilation is not adequate, mandate and fund appropriately sized portable air filtration (HEPA) units, installed under appropriate professional guidance, as options to filter bioaerosols indoors.
    - Engaging engineers and other ventilation specialists to develop clear indoor ventilation standards that account for aerosol virus transmission and integrate them in operating guidelines for workplaces with a higher risk of aerosol transmission.
- Minimize harm by expanding access to vaccines:
    - Design a comprehensive, multilingual public education and outreach strategy including appropriate equity training to healthcare workers and providers.
    - Ensure that all workers have free access to vaccines, regardless of immigration status, and in ways that do not cause fear of reprisals (e.g., for migrant farmworkers).
    - Require employers to give workers paid time off to get vaccinated.
- To further protect workers and others:
    - Enforce the legal requirement that employers provide necessary protective equipment, rather than relying on workers to do individual point of care risk assessments.
    - Ensure that no high-risk healthcare worker (HCW) or other essential worker is denied access to a fit-tested respirator (N95, elastomeric, or equivalent).
    - In healthcare, ensure that situations requiring a respirator include all aerosol generating behaviours (i.e., shouting, singing, coughing, sneezing, speaking, and heavy and regular breathing), and account for proximity to other people, time spent with patients and others, building air quality, and patient compliance with masking for source control.
    - For other essential workers, require respirators in situations involving crowding, close contact, all aerosol generating behaviours, and poor building air quality.
    - Through the Ministry of Labour, Training and Skills Development (MLTSD), ensure that the Occupational Health and Safety Act (OHSA) is followed and enforced (e.g., fully including joint health and safety committees in information-sharing and other activities, inspectors enforce the law).

  - Reinforce that section 25(2)(h) of OHSA requires **all employers** to "take every precaution reasonable in the circumstances for the protection of a worker".
- To further protect Ontario's students and education workers, the Ministry of Education should:
  - Institute smaller cohorts that include the workers in the classroom.
  - Provide enhanced PPE for education workers, teachers, education assistants, designated early childhood educators, and others who routinely work in close contact with special needs students.
  - Improve air quality, especially in schools with outdated HVAC systems or with windows that don't open, by putting HEPA air purifiers in every occupied room.
  - Mandate active and enhanced screening of everyone entering schools.
  - Dismiss classes/cohorts when at least one case of COVID is identified, including close contacts of the identified case(s), where "close" does not ignore staff wearing barrier face coverings or surgical masks.

Construction workers are highly mobile, often working in remote and difficult conditions. The pandemic has exposed serious deficiencies in basic hygiene on those sites. Workers have been expected to accept unsanitary toilets, clean-up stations without water, and being crammed into elevators. They need better protection now, and in the future. So do others working outdoors and/or in remote settings (e.g., migrant agricultural workers).

Therefore, we also recommend the MLTSD:

- Increase workplace inspections to ensure compliance and prevent COVID-19 outbreaks due to unsanitary conditions.
- Enforce section 29 of O. Reg. 213/91 (constructors must provide, service, and clean adequate toilets and clean-up facilities *with running water* at every project).
- Take similar approaches in other settings with similar hazards and conditions (e.g., agricultural work, public transit operators).

Developing and implementing effective guidance and solutions for all sectors, will require the full range of expertise (e.g., occupational hygienists, ventilation engineers, aerosol scientists, physicians). It will require communications specialists to help prepare and deliver clear messages. And it will require the voices of workers and their unions.

Despite all the difficulties we have faced in the pandemic, we and our members have helped to keep our economy going. Rather than simply asking people to work without effective prevention, we need you to take concrete action to protect all Ontario workers – and therefore, also their families and communities – from this virus. We need you to act on all these recommendations, quickly.

If that happens, workers and their families will know that you have their backs as they continue to step up and do their essential work. They will also want to know that once this pandemic is over, your government will ensure that construction and other employers work with their unions to address the prevention gaps exposed in the pandemic (e.g., construction site hygiene) more comprehensively. We are ready to work with you and our employers to make these recommendations and other measures a reality. For that to happen, we need you to open the door.

Therefore, we request a quick response, followed by effective swift action.

Sincerely,

P. Coates

PATTY COATES
President

PC/RH/sy/jc/Cope343

Signed on behalf of the following organizations that endorse this call, and the recommendations outlined herein.

Alan Willaert, Canadian Federation of Musicians (CFM)
Mark Evard, Canadian Union of Postal Workers (CUPW-Central Region)
Don Foreman, Canadian Union of Postal Workers (CUPW-National)
Fred Hahn, Canadian Union of Public Employees (CUPE Ontario)
Raj Singh, Carleton University Academic Staff Association (CUASA)
Tiffany Balducci, Durham Region Labour Council
Sam Hammond, Elementary Teachers' Federation of Ontario (ETFO)
Mark Ellerker, Hamilton-Brantford Ontario Building and Construction Trades Council (HBBT Council)
Brian Ross, Insulators Local 95
Liz Stuart, Ontario English Catholic Teachers' Association (OECTA)
Janet Paterson, Ontario Network of Injured Worker Groups (ONIWG)
Vicki McKenna, Ontario Nurses' Association (ONA)
Harvey Bischof, Ontario Secondary School Teachers' Federation (OSSTF/FEESO Provincial)
Craig Reynolds, Public Service Alliance of Canada (PSAC-Ontario)
Alex Silas, Public Service Alliance of Canada – National Capital Region (PSAC-NCR)
Sharleen Stewart, Service Employees International Union (SEIU Healthcare)
Scott Travers, Society of United Professionals, IFPTE Local 160
Ray Dillard, Toronto Musicians' Association, Local 149 (TMA)
John Nock, UFCW Canada, Local 12R24
Geoff Roman, United Association (UA)
Marty Warren, United Steelworkers (USW District 6)
Barry Fowlie, Workers United Canada Council (WUCC)
Linda Vannucci, Workers' Health and Safety Legal Clinic (WHSLC)

5

October 3, 2021 tweet from RNAO CEO Doris Grinspun about a mask classification system Nicolas Smit created to help people easily understand the protection each type of mask offers from droplet transmission as well as airborne transmission for both the person wearing the mask as well as those around the wearer

Source:
https://twitter.com/DorisGrinspun/status/1444795414583066624?s=20&t=SG4nJwPohPNkAuMv7ananA

Doris Grinspun RN, PhD LLD(hon),Dr(hc), FAAN,O.ONT
@DorisGrinspun

#MustRead brilliant & easy for all. Thanks Nicolas @PPEtoheros

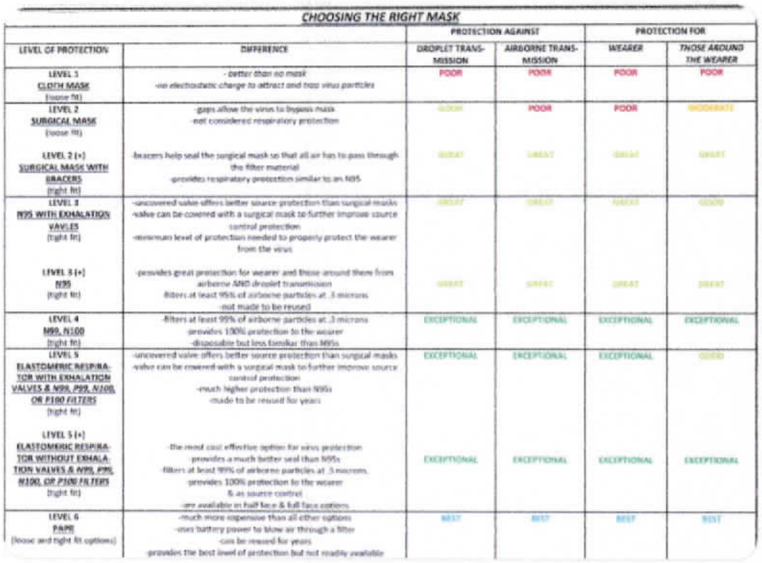
Let's keep at it to protect ourselves and others ‼️

➡️ #FullyVaccinated

➡️ #GoodVentilation

➡️ #Masking in ALL indoor public places AND outdoors when crowded ‼️

#Covid_19 Check mask protection made simple ⤵️



CHOOSING THE RIGHT MASK

		PROTECTION AGAINST		PROTECTION FOR	
LEVEL OF PROTECTION	DIFFERENCE	DROPLET TRANSMISSION	AIRBORNE TRANSMISSION	*WEARER*	*THOSE AROUND THE WEARER*
LEVEL 1 CLOTH MASK (loose fit)	- better than no mask -no electrostatic charge to attract and trap virus particles	POOR	POOR	POOR	POOR
LEVEL 2 SURGICAL MASK (loose fit)	-gaps allow the virus to bypass mask -not considered respiratory protection	GOOD	POOR	POOR	MODERATE
LEVEL 2 (+) SURGICAL MASK WITH BRACERS (tight fit)	-bracers help seal the surgical mask so that all air has to pass through the filter material -provides respiratory protection similar to an N95	GREAT	GREAT	GREAT	GREAT
LEVEL 3 N95 WITH EXHALATION VAVLES (tight fit)	-uncovered valve offers better source protection than surgical masks -valve can be covered with a surgical mask to further improve source control protection -minimum level of protection needed to properly protect the wearer from the virus	GREAT	GREAT	GREAT	GOOD
LEVEL 3 (+) N95 (tight fit)	-provides great protection for wearer and those around them from airborne AND droplet transmission -filters at least 95% of airborne particles at .3 microns -not made to be reused	GREAT	GREAT	GREAT	GREAT
LEVEL 4 N99, N100 (tight fit)	-filters at least 99% of airborne particles at .3 microns -provides 100% protection to the wearer -disposable but less familiar than N95s	EXCEPTIONAL	EXCEPTIONAL	EXCEPTIONAL	EXCEPTIONAL
LEVEL 5 ELASTOMERIC RESPIRATOR WITH EXHALATION VALVES & N99, P99, N100, OR P100 FILTERS (tight fit)	-uncovered valve offers better source protection than surgical masks -valve can be covered with a surgical mask to further improve source control protection -much higher protection than N95s -made to be reused for years	EXCEPTIONAL	EXCEPTIONAL	EXCEPTIONAL	GOOD
LEVEL 5 (+) ELASTOMERIC RESPIRATOR WITHOUT EXHALATION VALVES & N99, P99, N100, OR P100 FILTERS (tight fit)	-the most cost effective option for virus protection -provides a much better seal than N95s -filters at least 99% of airborne particles at .3 microns -provides 100% protection to the wearer & as source control -are available in half face & full face options	EXCEPTIONAL	EXCEPTIONAL	EXCEPTIONAL	EXCEPTIONAL
LEVEL 6 PAPR (loose and tight fit options)	-much more expensive than all other options -uses battery power to blow air through a filter -can be reused for years -provides the best level of protection but not readily available	BEST	BEST	BEST	BEST

👤 Dr. Lynora Saxinger MD FRCPC Infectious Diseases and 4 others

Nicolas Smit @PPEtoheros · Oct 3, 2021

Level 1 has the least amount of overall protection while level 6 has the most. If you are looking for a mask to protect yourself as well as others, a level 2+ or higher will work. As a HCW near Covid patients, a level 4 or higher offers 100% protection. theguardian.com/world/2021/jun...

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Section G

Misinformation spread by journalists citing the government sources as fact and news investigations mentioning the negligence

1

New York Times investigation from May 27, 2020 which explains how the CDC had planned to put elastomeric respirators into widespread use during pandemics but once a pandemic occurred, they abandoned that plan and refused to let the public know they could even be used as N95 alternatives. It explains how well they work and how well liked they are by hospitals that have put them into widespread use. NDP MPP Health Critic France Gelinas said she shared this New York Times investigation with the province in the first wave.

Source: https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

2

CBC news article from July 11, 2020 explaining that 30 paramedics from Ottawa had to be taken from frontline duty because they ran out of N95s that fit their face. Instead of being pulled from duty, the government could have distributed some of the 100,000 elastomeric respirators in order not to put Ottawa residents in harms way due to the lack of paramedics available to respond to 911 calls.

Source: https://www.cbc.ca/news/canada/ottawa/ottawa-coronavirus-paramedics-mask-shortage-1.5643899

3

CBC news article from September 22, 2020 explaining that staff in nursing homes continued to be infected during a deadly outbreak and that staff lacked N95s to properly protect themselves.

Source: https://www.cbc.ca/news/canada/ottawa/workers-say-only-rns-get-n95-masks-owner-government-say-masks-available-1.5733423

4

CBC Marketplace article from November 13, 2020 which explains that people should actively avoid valved masks because they are too dangerous to use and they cite government misinformation on government websites.

Source: https://www.cbc.ca/news/canada/marketplace-masks-test-1.5795481

5

5 – Email Nicolas Smit received on September 3, 2021 from Litsa Sourtkis, the Executive Producer of the Marketplace article with the misinformation on valved masks. She said the CBC will not remove the misinformation on valved masks being too dangerous use because there weren't any standards for consumer masks and the CBC falsely believed elastomeric respirators were not available to the public. Litsa goes on to say she forwarded Nicolas's email to the expert the CBC used for their investigation who confirmed he personally uses elastomeric respirators and that they offer much better protection than surgical masks. The expert says he is not up to date on the current knowledge of exhalation valves so would not be in a position to be able to recommend elastomeric respirators to the public and is unaware the valve can be covered or the effect that would have. Litsa says since the information on exhalation valves being too dangerous to use comes directly from the government, the CBC won't investigate the misinformation and that while the CBC confirmed elastomeric respirators are used in healthcare, the CBC wont let the public know they are safe.

Source: Email communication

6

Email Nicolas Smit received from the CBC Ombudsman on October 22, 2021. Jack Nadler explains that while he thinks the CBC should be letting the public know about the importance of elastomeric respirators he cannot control what they report on. He explains he won't ask Marketplace to remove the misinformation since the CBC had reached out to a supposed expert who said they were dangerous and since the government was saying they were too dangerous to use as well.

Source: email communication

1

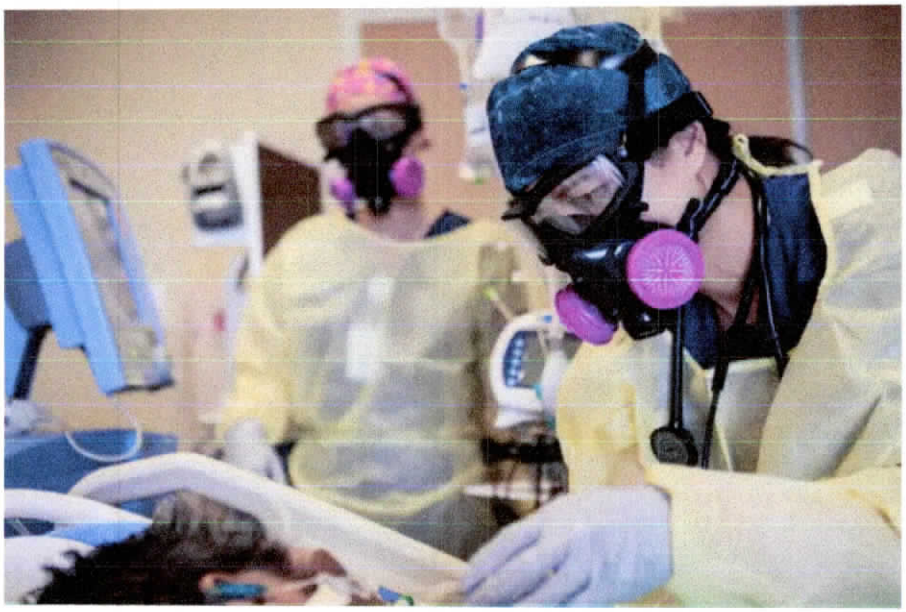
New York Times investigation from May 27, 2020 which explains how the CDC had planned to put elastomeric respirators into widespread use during pandemics but once a pandemic occurred, they abandoned that plan and refused to let the public know they could even be used as N95 alternatives. It explains how well they work and how well liked they are by hospitals that have put them into widespread use. NDP MPP Health Critic France Gelinas said she shared this New York Times investigation with the province in the first wave.

Source: https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

They Evoke Darth Vader, but These Masks May Save Your Doctor's Life

With medical masks in short supply, several hospitals have turned to industrial models. They get rave reviews and are allowed by the F.D.A., but the Trump administration has no plans to encourage distribution or production.

May 27, 2020



Kirsten Luce for The New York Times

Even among the surreal sights of an intensive care unit crowded with Covid-19 patients, Dr. Elaine Fajardo's mask stands out.

Jet-black silicone with magenta-capped filters protruding from both sides, it is more commonly the protection of choice at construction sites and industrial plants. But for Dr. Fajardo, it has been a precious and potentially lifesaving medical resource.

"I think these really saved us from a crisis," said Dr. Fajardo, a pulmonary and critical care physician at the Yale New Haven Hospital in Connecticut.

Story continues below advertisement

In the past, Dr. Fajardo, like most health care workers, relied on disposable N95 masks, which are in critically short supply globally because of the coronavirus pandemic. Now she is the beneficiary of a prescient decision: As the virus raged in China, Yale hospital administrators bought about 1,200 of the reusable silicone masks, known as elastomeric respirators, and gave them to doctors, nurses and respiratory therapists starting in March.

Dr. Elaine Fajardo, a pulmonary and critical care physician at Yale New Haven Hospital, visiting Bob Schwartz, a recovering coronavirus patient.Kirsten Luce for The New York Times

Government-supported research predicted over a decade ago that a pandemic would cause a dire shortage of disposable masks, and multiple federal agencies urged hospitals and policymakers to consider stockpiling elastomerics, which are designed to be cleaned and reused for years and are government-certified to protect at least as well as N95s. Last year, researchers simulating a pandemic found that health care workers could be rapidly fitted and trained to use the masks, and last month the Centers for Disease Control and Prevention published guidance on deploying them in response to the coronavirus.

But only a handful of U.S. hospitals are using the masks widely, and the federal government — including the agency that manages the Strategic National Stockpile — has made no effort to boost production or facilitate their distribution, an examination by The New York Times found. At the same time, the shortage of disposable N95s is so severe that federal regulators have taken the extraordinary step of allowing them to be used multiple times with little-tested decontamination methods.

Story continues below advertisement

The Federal Emergency Management Agency said it "is not actively seeking out procurement" of elastomerics. The Department of Health and Human Services said the stockpile it manages "has not received any requests for elastomeric respirators and does not hold them in inventory." When asked why the masks were not being deployed despite the studies and previous government guidance, each agency referred The Times to the other.

As the virus continues to spread and medical centers plan for a predicted second wave of infections, health workers who use elastomerics expressed bewilderment at their untapped potential.

"I don't think that there's anything we're doing that is markedly unique that would be difficult to implement anywhere else," said Dr. Richard Martinello, Yale New Haven's medical director for infection prevention.

Idled industrial facilities likely have elastomerics sitting unused, and more could be produced relatively quickly by repurposing manufacturing lines, according to occupational health experts and industry officials. At least one manufacturer, MSA Safety, has hired additional workers and increased production at a factory in Jacksonville, N.C., and the company says it has the capacity to ramp up further.

Story continues below advertisement

"For where we are today with health care workers reusing single-use respirators, it's crazy that we're not deploying multiple-use elastomerics more broadly in hospital settings," said Akhil Agrawal, president of American Medical Depot, which supplies medical centers across the country.

Elastomerics pose practical challenges, including fitting and cleaning, but the primary obstacles to wider adoption have been cultural and economic: concern about the masks' industrial appearance and reluctance to consider alternatives when N95s were cheap and abundant.

"The basic concepts are proven," said Dr. Ron Shaffer, who ran the research branch of a C.D.C. lab focused on protective gear for workers from 2003 to 2018. "Yes, there are some questions about the exact way you disinfect them and clean the parts and things like that, but at a fundamental level, the products are designed for that."

Story continues below advertisement

Hospitals in at least four major U.S. health systems are using elastomerics to protect against the coronavirus. In interviews, administrators credited the devices with helping to prevent shortages of personal protective equipment, and workers expressed gratitude.

"It allows me to feel safe, to focus my attention on the place it needs to be, which is on patient care," said Dr. Andrea Levine, a pulmonary and critical care physician in the I.C.U. at the University of Maryland Medical Center in Baltimore.

Administrators said they suspected many other medical centers didn't know about elastomerics. "I do think that part of this is around education," said Dr. Sri Chalikonda, chief medical operations officer for Allegheny Health Network, which is using the masks at multiple hospitals near Pittsburgh. "It wasn't that it was an option that was turned down. It was an option that probably wasn't given."

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Anticipating continued N95 shortages and spikes in demand, administrators said elastomerics offered a hedge.

"We don't know how long this pandemic is going to last, and we don't know if it's going to be cyclical," Dr. Chalikonda said. "Having these in stock, able to be put on a shelf somewhere and brought back out as needed, has really given us a lot more comfort that we can control our own destiny."

'The Best Approach to Preparedness'

The H1N1 flu pandemic in 2009 that claimed an estimated 12,000 lives in the United States was a jolt to Dr. Charlie Little. As medical director of emergency preparedness at the University of Colorado Hospital near Denver, he planned for the unthinkable. But when the flu arrived, Dr. Little watched the hospital burn through much of its supply of N95s, and when he tried or buy more, there were few to be had.

The following year he began planning for the inevitable next pandemic. The same supply chain vulnerabilities would recur, he reasoned, but stockpiling enough N95s would consume a prohibitively large chunk of the hospital's budget and storage space. Another option, battery-powered respirators, required costly maintenance and, at roughly $800 each, were too expensive.

Story continues below advertisement

A third possibility was elastomerics. Many models were certified to provide protection at least as good as that of N95s. They could be reused for years, requiring only an occasional filter replacement, and cost about $30 or $40 apiece.

One elastomeric could do the work of hundreds of N95s, maybe thousands, and would occupy a fraction of the storage space.

The hospital bought about 600 elastomerics, which sat for a decade in a climate-controlled room — until coronavirus cases began appearing in the Denver area this March.

Dr. Abigail Lara now wears one in a Covid-19 section of the I.C.U. "It takes a little bit of getting used to, but I find them to be comfortable," she said. "I think we all appreciate that we were given this level of protection."

Story continues below advertisement

Dr. Little's worries about the supply of N95s were shared by government researchers.

After an outbreak of another illness caused by a novel coronavirus — Severe Acute Respiratory Syndrome, or SARS — in 2003, dependence on N95s became a concern for multiple federal agencies.

C.D.C. studies estimated that during a pandemic American medical and emergency-response workers would need at least 1.7 billion N95s — more than the United States typically produced in a year. There was little room to ramp up domestic production, researchers found, and in a crisis, other countries might stop exporting them.

Department of Veterans Affairs studies concluded that stockpiling only N95s wasn't feasible. The Occupational Safety and Health Administration issued guidance warning of likely shortages. Both agencies suggested alternatives, including elastomerics.

Using them "could substantially reduce the supply-demand gap," C.D.C. researchers found. Stockpiling elastomerics was also the least expensive option, according to V.A. and O.S.H.A. analyses. Buying a mix of N95s and elastomerics "is the best approach to preparedness for most health care organizations," a V.A. study concluded in 2015.

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But elastomerics remain a rarity in hospitals, and a panel convened by the National Academies of Sciences, Engineering and Medicine in 2018 identified "only a few" U.S. health care facilities using them widely.

The panel found elastomerics effective and viable both for routine use and during a crisis. But there were practical hurdles, including the need for standardized guidance on wearing and cleaning the masks.

"Without attention to this issue, facilities may be ill prepared to respond to a respiratory disease pandemic that exhausts respirator supplies and could put the safety of health care workers and the care of patients at risk," the report concluded.

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The C.D.C. lab commissioned a series of studies. The first began last year and was nearly finished when the coronavirus hit.

'I Feel Secure'

As the virus spread and N95s became scarce, Dr. Chalikonda and his colleagues at the Allegheny Health Network searched for alternatives.

They found their answer from MSA Safety, a Pennsylvania-based company that makes safety gear — including elastomerics — for construction and industrial workers. Dr. Chalikonda, a surgeon charged with overseeing parts of the supply chain for the network's hospitals, dug into the research on the reusable masks.

"We could not find any studies that would support us not doing this," he said. "Exactly to the contrary, we found that there were instances in health care where these were appropriate."

Story continues below advertisement

Hospitals were already training and fitting employees to wear N95s properly, and C.D.C.-funded researchers found that similar training for elastomerics could be accomplished quickly — something confirmed by Dr. Chalikonda and officials at the other hospital systems using them.

"I got fitted for it, and I used it that day on patients," said Madison Childers, an I.C.U. nurse at Allegheny's Jefferson Hospital.

The rubbery masks can muffle workers' speech, but nurses and doctors said they had devised easy workarounds, such as writing on white boards. In interviews, several said elastomerics were more comfortable than N95s and they felt better protected — a perception supported by C.D.C. research.

"I don't worry about it slipping off my nose or moving when I talk," said Dr. Tiffany DuMont, a pulmonary and critical care physician at Allegheny General Hospital in Pittsburgh. "I feel secure in it that I could do what I needed to do for that patient without worrying that I'm not being protected."

Story continues below advertisement

Past concerns about the masks' industrial appearance are now largely moot, as many patients are sedated, tethered to unfamiliar machines and surrounded by workers outfitted with an array of other protective gear. Aside from the occasional cultural reference — Darth Vader, Predator, the meth-cooking leads in "Breaking Bad" — patients rarely mention the masks, the health workers said.

In March, the F.D.A. cleared up previous regulatory uncertainty by formally authorizing the use of elastomerics in hospitals. (Some models shouldn't be used during surgery, the C.D.C. advises, but an agency spokeswoman said this was a narrow restriction that generally didn't apply in emergency rooms or

I.C.U.s.)

Government-backed studies have demonstrated effective techniques for cleaning and disinfecting the masks, and the C.D.C. offered guidance in April. At the four medical centers whose employees spoke with The Times, similar systems are in place. Workers use disinfecting wipes on them periodically — which takes just minutes — and at the end of a shift, most send their masks for cleaning at sterile processing facilities.

Story continues below advertisement

Some front-line workers using elastomerics said they were likely to return to N95s after the pandemic, but others said they planned to continue using the new masks.

"I think I will always hold on to and cherish my elastomeric," said Dr. Levine of the University of Maryland Medical Center. She envisions a day when she is meeting with medical students in her office and they see the unusual mask.

"'Dr. Levine, why do you keep your elastomeric in your top desk drawer?'" she imagines them asking. "I'll say, 'Because that's how I made it through Covid.'"

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Thanks for reading The Times.

CBC news article from July 11, 2020 explaining that 30 paramedics from Ottawa had to be taken from frontline duty because they ran out of N95s that fit their face. Instead of being pulled from duty, the government could have distributed some of the 100,000 elastomeric respirators in order not to put Ottawa residents in harms way due to the lack of paramedics available to respond to 911 calls.

Source: https://www.cbc.ca/news/canada/ottawa/ottawa-coronavirus-paramedics-mask-shortage-1.5643899

Mask shortage sidelining some Ottawa paramedics

BULANCE
AMBULANCE
4114
ACK 150 METRES
PARAMEDIC

Some 30 Ottawa paramedics have been removed from front-line duties because their employer has run out of the N95 masks that properly fit their faces.

Soon after the arrival of COVID-19, the Ottawa Paramedic Service's mask usage shot up and they found themselves completely out of the 3M 1870+, one type of N95 mask paramedics had access to before the pandemic, a source within the service told CBC.

The other N95 mask used by the service, the 3M 1805, doesn't seal properly for some paramedics who have smaller heads or narrower faces.

Those paramedics who relied on the 3M 1870+ began being redeployed in mid-May, the source said, with some now driving rental cars to ferry water to their colleagues on the front lines in an attempt to keep them hydrated.

Others have been essentially sidelined, collecting paycheques for roughly two months without any work to do, according to the source.

Masks produced in 'limited amounts'

There have been reports of global shortages of N95 masks, said to offer better protection against COVID-19 than cloth or paper masks, since the pandemic began.

That's forced provinces and health services to scramble to find them.

Most of the Ottawa Paramedic Service's roughly 700 paramedics can fit the still-in-stock 3M 1805 mask, said Anthony Di Monte, general manager of emergency and protective services for the City of Ottawa.

However, supply issues caused by the COVID-19 pandemic led to a shortage of the more specialized 3M 1870+, Di Monte told reporters Friday afternoon.

"It's like, if you have size 14 feet, [it's] difficult to find those types of shoes. The same thing for these masks. They're normally produced in limited amounts," Di Monte said. "And so that's what's happening right now. We don't have them."

Due to COVID-19 shortages, the Ottawa Paramedic Service has run out of the masks that fit the faces of roughly 30 of their paramedics. (Ottawa Paramedic Service/Twitter)

The paramedic service has been working with both Ontario's Ministry of Health and the Champlain Local Health Integration Network to obtain N95 masks that fit properly, according to a statement from acting chief Peter Kelly.

"These specific masks continue to be on backorder and are not available from [their] stockpile inventory," Kelly wrote.

As for the paramedics who've been removed from critical care duty, Kelly said the service has been trying to get them access to a third type of mask called the 3M 7500.

"[We] will shortly be fit testing them to a new respiratory protection mask so that they can safely return to their primary duties," he wrote.

Union unimpressed

The situation doesn't sit well with the paramedics' union.

"If we can't protect ourselves, we can't do our job, and we can't protect the public," said Jason Fraser, chair of the ambulance committee of Ontario for the Canadian Union of Public Employees (CUPE).

While the City of Ottawa should be ensuring its paramedics have access to the proper masks, the responsibility ultimately falls on the province, Fraser said.

"The provincial government needs to step up and ensure that the PPE for paramedics and every front-line worker is readily available, and we shouldn't have to worry about where that next piece of equipment is coming from."

In a statement, Ministry of Health spokesperson David Jensen told CBC that the supply of N95 masks is "stabilizing," but they remain difficult to get.

With files from Adrian Harewood, Natalia Goodwin and Trevor Pritchard

3

CBC news article from September 22, 2020 explaining that staff in nursing homes continued to be infected during a deadly outbreak and that staff lacked N95s to properly protect themselves.

Source: https://www.cbc.ca/news/canada/ottawa/workers-say-only-rns-get-n95-masks-owner-government-say-masks-available-1.5733423

Staff battling deadly COVID-19 outbreak at Ottawa nursing home say they lack PPE

MASK MUST REMAIN ON AT ALL TIMES
FAILURE TO DO SO WILL RESULT WITH THE VISIT ENDING IMMEDIATELY

West End Villa, owned by Extendicare, is currently in the midst of the province's most serious COVID-19 outbreak. (Stu Mills/CBC)

Personal support workers at an Ottawa long-term care home in the midst of a deadly COVID-19 outbreak say they don't have the personal protective equipment (PPE) they need to do their jobs safely, contradicting assurances from both the home's owner and the province.

At least 92 residents and staff members at West End Villa have now tested positive for COVID-19. As of Monday, 11 residents had died. The nursing home is currently experiencing the most severe COVID-19 outbreak in the province.

- Outbreak could have been avoided

On Monday, the NDP asked Long-Term Care Minister Merrilee Fullerton about a lack of N95 masks for staff at the home.

Fullerton responded that she's been in constant contact with the home to make sure staff there have the equipment they needed.

"I can assure this chamber and Ontarians that West End Villa has the PPE that it requires, including N95 [masks], available to the staff to use," said Fullerton inside the Ontario Legislature on Monday. "What is happening in our long-term care homes in terms of the spread of COVID ... is a reflection of what's happening in the community. Ottawa is struggling to keep its numbers down."

In a statement to CBC, Extendicare, the company that owns and operates West End Villa, said N95 masks are not actually "recommended or required" by health authorities in long-term care settings.

"Our contacts at The Ottawa Hospital have confirmed this with our teams. The Ottawa Hospital staff and physicians also use surgical masks when they are on site at West End Villa," said Extendicare management.

Long-Term Care Minister Merrilee Fullerton answers questions during the daily briefing at Queen's Park in Toronto. (Frank Gunn/Canadian Press)

Only RNs offered N95 masks

Personal support workers (PSWs) and registered practical nurses at West End Villa told CBC that registered nurses are the only staff members at the 242-bed facility who currently have access to N95 masks.

As of Monday, 28 staff members had tested positive for the virus, many of them PSWs.

According to three staff members who spoke to CBC on the condition of anonymity, some employees are terrified of getting sick and some have stayed home from work, leaving West End Villa short-handed and forcing managers to call in temporary replacement workers.

The employees say about 30 of the West End Villa staff members currently taking care of COVID-19 patients are now living at an Ottawa hotel.

In a conference call between managers and staff on Monday, employees were told PSWs who want N95 masks will now be fitted for the protective equipment on Wednesday.

Extendicare West End Villa is a long-term care facility located on Elmira Drive in Ottawa's west end. (CBC News)

Families also concerned

Relatives of residents who spoke to CBC say they're also concerned about the safety of their loved ones.

None of the families who contacted CBC on Monday wanted to speak publicly for fear their comments would have an impact on their family members' care.

"This all could have been prevented," said one woman. "There's not enough staff to cover the patients. You know, it's ridiculous. They're not getting the care they need and they're not moving fast enough to isolate when the patients are sick."

ABOUT THE AUTHOR

Julie Ireton

Senior Reporter

Julie Ireton is a senior reporter who works on investigations and enterprise news features at CBC Ottawa. She's also the host of the CBC investigative podcast, The Band Played On found at: cbc.ca/thebandplayedon You can reach her at julie.ireton@cbc.ca

4

CBC Marketplace article from November 13, 2020 which explains that people should actively avoid valved masks because they are too dangerous to use and they cite government misinformation on government websites.

Source: https://www.cbc.ca/news/canada/marketplace-masks-test-1.5795481

Marketplace tested over 20 different masks. Here's what will best protect you and others during the pandemic

A selection of some of the masks Marketplace tested. (CBC)

Wearing a mask is critical to reducing the spread of COVID-19, but rigorous tests conducted on behalf of CBC's *Marketplace* found that while some work very well, others offer little protection from the particles that transmit the novel coronavirus. One type of mask can even spread those particles to others.

Months into the pandemic, there are still no standards for consumer masks. So *Marketplace* opted to compare more than two-dozen masks to what is commonly considered the gold standard in protecting health-care workers from infectious diseases like COVID-19 — the N95 mask.

Marketplace purchased the masks in stores and online from a variety of sellers. The masks were also made out of varying materials and featured different designs.

Testing Face Masks & Airline Refunds

We test over 20 different masks and reveal which are the most effective at keeping you safe from COVID-19 and which masks you should avoid. PLUS, how to get a refund on your cancelled flights.

Marketplace put the masks through the rigorous National Institute for Occupational Safety and Health (NIOSH) standard test, conducted at a lower air-flow regimen to reflect normal breathing. The test is usually reserved for N95s and personal protective equipment (PPE) intended for health-care workers. A standard NIOSH aerosol test measures filtration efficiency, meaning the quantity of particles the mask filters out as the wearer breathes in.

An image shows leakage from an ill-fitting mask during Marketplace's lab test at the University of Toronto's Dalla Lana School of Public Health. (CBC)

An N95 mask must have a 95 per cent filtration efficiency.

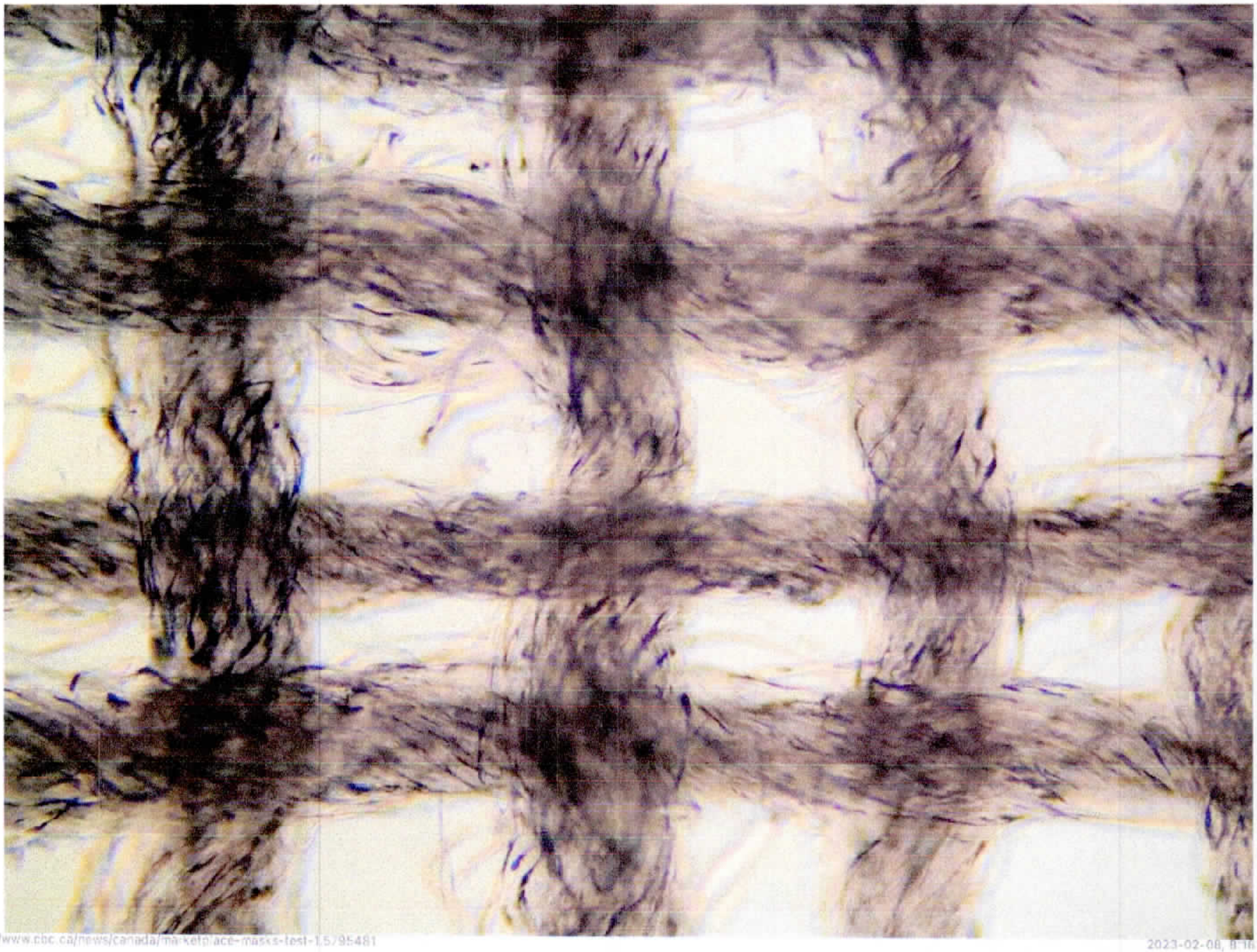
"This is the benchmark test. And it's actually useful because it allows us to compare consumer market masks to masks that we know a lot about," said James Scott, a professor from the University of Toronto's Dalla Lana School of Public Health. Scott is a specialist in bioaerosols and runs the lab where *Marketplace*'s tests were run.

The test pulls a constant breath of air containing tiny salt particles through the mask material. The salt particles are similar in size to particles able to contain the coronavirus that might originate from droplets expelled by an infected person's breath, cough or sneeze. During the test, samples of air inside and outside the mask are compared to see how effective the mask is at reducing the level of particles.

Previous tests on consumer masks have commonly looked at how masks can help block particles when coughing or sneezing and prevent transmission to others. But the *Marketplace* test shows that certain materials make some masks better at limiting wearers' exposure by filtering what they breathe in, Scott said.

"Even fairly low-efficiency masks are actually quite effective at catching much larger particles. But, it takes a really good mask to catch the small ones as well. And we know that the virus will travel not only on the big ones but the small ones as well," said Scott.

PHOTOS | A closer look at filtration efficiency of mask materials:



This is a section of bandana material under a microscope. It shows the very porous, loose weave of the fabric. (CBC)

Results

(CBC)

Polypropylene fabric masks as good as N95

Marketplace's test found some masks are just as good as an N95 when it comes to filtering out those potentially harmful particles, including one made with something called polypropylene fabric.

A mask with an inner layer of melt-blown non-woven polypropylene and outer layers of cotton. (CBC)

Polypropylene fabric, in this case, is a melt-blown, non-woven plastic fabric. Melt-blown, non-woven polypropylene (NWPP) is commonly used in surgical and N95 masks.

The consumer mask *Marketplace* tested with an inner layer of melt-blown, non-woven polypropylene fabric and outer layers of cotton had filtration efficiency rates as high as an N95. Scott said the combination of multiple materials contributed to the strong result.

"This is a really good example of multiple layers of different materials combining to make something greater than the sum of the parts," said Scott.

An example of a blue three-ply surgical-type mask Marketplace tested. (CBC)

Blue three-ply surgical-type masks

One of the two-ply, high thread count cotton masks Marketplace tested. (CBC)

Blue three-ply surgical-type disposable masks also reported some of the highest filtration efficiency rates in the *Marketplace* test, which was of no surprise to Scott, as most contain that melt-blown, non-woven polypropylene fabric.

"It's this interwoven matrix of fibre. Air needs to travel around each one of those fibres and it meets the next fibre and it needs to bend its path. So as it does that, those fabrics pull out lots and lots of particles," said Scott.

Two-ply and three-ply cotton masks

Marketplace also tested a number of cotton masks, including a two-layer, 100 per cent cotton mask, and a three-layer, 100 per cent cotton mask. More layers of cotton didn't necessarily mean a better mask. The three-layer cotton mask *Marketplace* tested did not perform well, but the two-layer cotton mask did.

One of the three-ply cotton masks Marketplace tested. Thread count unknown. (CBC)

There was also a noticeable jump in filtration efficiency in cotton masks made with a higher thread count.

Masks made with 600 and 680 thread count cotton had filtration efficiencies almost twice that of the other cotton masks tested. Scott said the weave of a fabric is critical when it comes to catching those potentially harmful particles.

When it comes to cotton masks, *Marketplace*'s test suggested the tighter the weave, the better.

Scott points out that manufacturers of consumer masks are not currently required to disclose details about thread count, and without that information it's difficult to say for certain what contributed to some cotton masks' poorer performance.

Valve masks, like the one seen here, are not effective at blocking COVID-19. (CBC)

Masks to avoid

Scott said consumers should avoid wearing valve masks. While they are useful for protecting someone from inhaling paint fumes or when working in a wood shop, they do not help control the spread of the virus.

The reason is simple.

"Air only moves through the filter part of the mask when air comes in. It doesn't move through the filter to exhale. It moves through the valve," he said. "So there's nothing to intercept those particles that you may be shedding into the environment."

Although valve masks are not recommended by the Public Health Agency of Canada, some members of the federal security force at Canada's Parliament in Ottawa were seen wearing them. (CBC)

Transport Canada has banned the wearing of valve masks, as has Via Rail, and airlines such as Air Canada. Toronto, Ottawa Public Health, Hamilton Public Health and the BC CDC all recommend against the use of valve masks.

The Public Health Agency of Canada (PHAC) said: "Masks with exhalation valves are not recommended, because they don't protect others from COVID-19 and don't limit the spread of the virus."

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Despite this, some members of the federal security force at Canada's Parliament in Ottawa, mandated to provide physical security for parliamentarians, employees and visitors to the parliamentary precinct, have been wearing valve masks while on duty.

One of the rayon masks Marketplace tested. (CBC)

In an email, the Parliamentary Protective Service told Marketplace: "The masks issued by the Parliamentary Protective Service (the Service), despite having a valve, meet the criteria outlined by PHAC regarding the appropriate use of non-medical mask or face covering. The Service has since replenished its stock with masks that do not include a breathing valve."

Other masks to avoid

The neck gaiter-style mask and bandanas were among the poorest performing when it came to filtration efficiency rates. Scott said the thin, porous materials they are made from is likely the reason they did a poor job filtering out any potentially harmful particles, which is made worse by their loose fit.

A two-layer, 100 per cent rayon mask was also among the worst performing masks Marketplace tested for filtration efficiency.

One of the gaiter-style masks Marketplace tested. (CBC)

Lack of standards, testing for consumer masks

Physician and infectious diseases specialist Monica Gandhi from the University of California, San Francisco expects mask requirements to be around for the foreseeable future, at least until there is enough of a safe and effective vaccine.

"I have become more and more convinced that they are one of the most important pillars of pandemic control," said Gandhi.

As *Marketplace*'s research has found that consumer masks protect the wearer in addition to others, public health agencies recently updated their guidelines to include that messaging.

Last week, Health Canada quietly updated its mask-wearing guidelines, adding "to protect yourself and others." On Tuesday, the U.S. Centers for Disease Control went further, updating its recommendations in favour of masking by outlining a number of studies that point to masking as drastically reducing transmission of the disease for both the wearer and others.

WATCH | How masks protect not only others, but the wearer, too:

Mask wearing doesn't only protect others, it also protects you, expert says

An infectious disease specialist cites research that suggests wearing a mask can lead to less severe illness from COVID-19 by limiting how much of the virus someone inhales.

"This is an incredibly exciting update from the CDC since messaging that allows the public to know that masks protect you as well as others will be more powerful in convincing skeptics that masks are important in public spaces to slow down spread and disease from COVID-19," Gandhi said.

She also made note of research released in September that suggested wearing a mask can lead to less severe illness from COVID-19 by limiting how much of the virus someone inhales.

The CDC did not cite the study in its bulletin. However, Gandhi said there is accumulating data behind this hypothesis.

Regardless, she said: "Stressing that a mask protects you is getting out the same message we have been trying to convey for the past many months of the pandemic — that wearing a mask gives you a sense of control over your own destiny and protection. It is an important message."

WATCH | These are the most effective face masks:

Lab tests reveal the best and worst face masks

Marketplace put more than two dozen consumer masks to the test to see which ones do a better job at protecting you and why.

With rigorous standards in place for medical-grade masks in Canada and around the world, Scott anticipates standards for consumer masks are likely coming as a consequence of the pandemic.

Marketplace asked Health Canada why there is still no guidance on packaging for consumers with respect to mask performance, or best practices for manufacturers looking to make better masks.

Health Canada said that although it has not set out or endorsed any standards for face coverings, it is actively monitoring the development of standards for face coverings and may revise its position when new information becomes available.

Tips for finding the right mask

What to look for.

- Start with something that fits you properly. Scott said a mask should fully cover your nose and chin, and be as tight fitting as possible around the rest of your face. If your glasses or sunglasses fog up when you are wearing your mask, you should choose another.
- Scott suggests consumers look for masks made with multiple layers, and that at least one of them be cotton, preferably the highest thread count you can find.

The average person does not need the same level of protection as a health-care worker on the front lines, Scott said, noting that any mask is better than no mask at all.

- ***Catch up on past Marketplace episodes any time on*** ***CBC Gem***

5 – Email Nicolas Smit received on September 3, 2021 from Litsa Sourtkis, the Executive Producer of the Marketplace article with the misinformation on valved masks. She said the CBC will not remove the misinformation on valved masks being too dangerous use because there weren't any standards for consumer masks and the CBC falsely believed elastomeric respirators were not available to the public. Litsa goes on to say she forwarded Nicolas's email to the expert the CBC used for their investigation who confirmed he personally uses elastomeric respirators and that they offer much better protection than surgical masks. The expert says he is not up to date on the current knowledge of exhalation valves so would not be in a position to be able to recommend elastomeric respirators to the public and is unaware the valve can be covered or the effect that would have. Litsa says since the information on exhalation valves being too dangerous to use comes directly from the government, the CBC won't investigate the misinformation and that while the CBC confirmed elastomeric respirators are used in healthcare, the CBC wont let the public know they are safe.

Source: Email communication

From: **LITSA SOURTZIS** litsa.sourtzis@cbc.ca
Subject: **Response to August 12th, 2021 complaint about CBC News: Marketplace**
Date: **Sep 3, 2021 at 5:00:11 PM**
To: **elastomericrespirator@hotmail.com**
Cc: **BRODIE FENLON** brodie.fenlon@cbc.ca, **Office of the General Manager and Editor in Chief** officeofgm@cbc.ca, **CBC Ombud** ombudsman@cbc.ca, **Jack Nagler** jack.nagler@cbc.ca

Dear Mr. Nicolas Smit,

As the executive producer of CBC News: Marketplace, I have been asked to respond to your concerns about an online article published on November 13th, 2020 under the headline *"Marketplace tested over 20 different masks. Here's what will best protect you and others during the pandemic"*

In your letter to CBC News dated August 12th 2021, you referred to the article containing *"dangerous misinformation around people needing to avoid any mask or respirator with an exhalation valve"*

In a subsequent letter dated September 3rd 2021, you wrote that *"the article has yet to be corrected and there isn't a statement put out by the CBC so people would know to stop being afraid of using elastomeric respirators due to exhalation valves."*

First, thank you for writing to explain your concerns in regards to our reporting.

Let me begin by assuring you that CBC prides itself on the excellence of its journalism. We take very seriously any suggestion that our journalism is inaccurate, biased or unfair, or in any way fails to meet the rigorous criteria set out in the CBC's Journalistic Standards and Practices.

I regret that you are disappointed by CBC News. But I also must assert, with respect, that I disagree with your conclusions about our report.

Please allow me to explain why.

The focus of this Marketplace investigation was stated in the second paragraph of the November 13th 2020 article:

"Months into the pandemic, there are still no standards for **consumer masks.** *So Marketplace opted to compare more than two-dozen masks to what is commonly considered the gold standard in protecting health-care workers from infectious diseases like COVID-19 — the N95 mask."*

Our journalists didn't test elastomeric respirators because these are not readily available to consumers. Whether these respirators should be recommended to Canadian health care professionals was beyond the scope of our report.

Your concerns and detailed analysis were forwarded to Professor James Scott. He was commissioned to conduct the testing of consumer face masks for *Marketplace*. Scott is Professor & Division Head, Occupational & Environmental Health, at Dalla Lana School of Public Health and a Professor at University of Toronto's Department of Laboratory Medicine & Pathobiology, Temerty Faculty of Medicine

He stands by the recommendations outlined in the online article. In a letter to our journalists, he wrote that:

"The primary value of masks of any kind in the pandemic is source control. Personal protection is a distant secondary priority.... I personally like elastomeric facepieces. As your viewer correctly points out, they can achieve a much better and more consistent fit which is very important for personal protection. However, there has been very little study of the performance of these masks and their filters under conditions where the exhalation valve has been defeated. Absent evidence, I am very

hesitant to recommend this."

In your correspondence with CBC News, it appears you acknowledge that it's advisable during a pandemic that the exhalation valves on consumer masks or elastomeric respirators should be covered.

Professor James Scott believes that it doesn't serve public health goals to have a complicated advisory where people are allowed to wear consumer masks with exhaust valves as long as they are covered: How do you block the valve? How do you make sure it's blocked effectively to prevent transmission to the public?

As has been reported in our article, Transport Canada has banned the wearing of valve masks, as has Via Rail, and airlines such as Air Canada. Toronto, Ottawa Public Health, Hamilton Public Health and the BC CDC all recommend against the use of valve masks. The Public Health Agency of Canada (PHAC) said: "Masks with exhalation valves are not recommended, because they don't protect others from COVID-19 and don't limit the spread of the virus."

Health Canada's website says **"respirators with exhalation valves are not considered acceptable for use during a pandemic.**

During the course of this pandemic, there has been an abundance of conflicting information available online as experts and the public race to understand the spread of the virus. This is precisely why our journalists rely on experts in science, medicine, and public health to explain the risks associated with COVID-19 and how to best protect ourselves against those risks.

Again, while the testing of elastomeric respirators for use in health care settings was beyond the scope of our report, your letters prompted further rigorous discussions with our journalists and the experts and public health authorities we consulted in our research - and for that we are always grateful.

I hope you can see that we consider these concerns and matters seriously, and that I have reassured you at least in part about the integrity of our news service.

If you have further questions, please do not hesitate to contact me over the phone at 647-537-4338.

It is also my responsibility to tell you that if you are not satisfied with my response, you may wish to ask the CBC Ombudsman to review the matter. The Office of the Ombudsman, an independent and impartial body reporting directly to the president, is responsible for evaluating program compliance with the CBC's journalistic policies. The Ombudsman may be reached by telephone at 416-205-2978, or by mail at Box 500, Terminal A, Toronto, Ontario M5W 1E6, or by fax at (416) 205-2825, or by e-mail at ombudsman@cbc.ca.

Sincerely,

Litsa Sourtzis
Executive Producer
CBC News: Marketplace

Email Nicolas Smit received from the CBC Ombudsman on October 22, 2021. Jack Nadler explains that while he thinks the CBC should be letting the public know about the importance of elastomeric respirators he cannot control what they report on. He explains he won't ask Marketplace to remove the misinformation since the CBC had reached out to a supposed expert who said they were dangerous and since the government was saying they were too dangerous to use as well.

Source: email communication

From: **CBC Ombud** ombud@cbc.ca
Subject: **Re: Litsa CBC Marketplace Misinformation on Elastomeric Respirators**
Date: **Oct 22, 2021 at 10:16:22 AM**
To: **Nicolas Smit** elastomericrespirator@hotmail.com
Cc: **BRODIE FENLON** brodie.fenlon@cbc.ca, **LITSA SOURTZIS** litsa.sourtzis@cbc.ca, **Natalia Goodwin** natalia.goodwin@cbc.ca

Dear Mr. Smit,

There are two things evident to me from reviewing the correspondence:

(1) You've made an interesting case that there are additional stories CBC could or should tell about elastomeric respirators.

(2) The Marketplace story from last November was conducted appropriately, for the reasons Ms. Sourtzis described in her reply to you. The report was focused on what consumers should know, and understandably relied on an expert and on the various recommendations against valve masks which it cited and attributed in the story. I understand that you would have liked it to play out differently, but it adhered to CBC's journalistic standards.

As Ombudsman, I have a mandate to evaluate the journalistic content created by CBC. But I operate independently from the programmers and have no say in their decisions about which stories to tell. It would be inappropriate for me to weigh in on what future coverage might look like.

So I have no further role to play in this matter. Whether Ms. Sourtzis or any other programmers wish to engage further is entirely up to them.

Sincerely,

Jack Nagler

CBC Ombudsman

ombud@cbc.ca

www.cbc.ca/ombudsman

On my website: Subscribe to reviews

Masks with exhalation valves don't protect others from COVID-19, health officials say

TORONTO -- Face masks are now a regular sight on the streets of Canadian cities, and come in all shapes, sizes and styles, from disposable surgical masks to brightly patterned cloth masks.

But not all masks provide the same level of protection to the wearer and those around them. Increasingly, health officials, countries, cities and airlines are recommending against masks with an exhaust valve -- or outright banning them.

You've likely seen these masks before: they look like any ordinary face covering, but have the addition of a raised plastic valve, around the size of a quarter, and usually set into one half of the mask.

The valve itself can be called a respirator valve, exhalation valve or exhaust valve. Some N95s -- which are normally very effective masks -- even have these valves.

But according to Health Canada's website, wearing masks with a valve will do little to prevent the spread of COVID-19.

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"Some commercially available respirators have exhaust valves which are intended to make the respirator more comfortable for the person wearing it, but also allow infectious respiratory droplets to be released outside the respirator," the health agency writes.

"Use of respirators with exhaust valves will not protect others from COVID-19. Please do not use respirators with exhalation valves."

The goal of the valve on these masks is to allow the user to breathe out more comfortably. The concept is that on an outward breath, the valve opens to allow the exhalation to escape and prevent the buildup of heat and bacteria on the inside of the mask.

This is great when you're wearing a mask to protect you from inhaling dust while doing some DIY renovation of your kitchen.

Not so great when you're wearing the mask because of a global pandemic, where anyone's breath might be carrying COVID-19 -- including yours.

Health officials have emphasized numerous times that the main purpose of wearing face masks is to protect others from you, not the other way around. Wearing a face mask may provide the wearer with more protection from contracting the virus than not wearing one, but its main goal is to cut down on droplets expelled from a person's mouth when they breathe, sneeze or cough.

Droplets sprayed from a person infected with COVID-19 is the main way the virus spreads, according to health experts. And people can spread the virus even if they're asymptomatic, or before they exhibit symptoms.

This means that a valve that allows your exhalation to pass through without being filtered through the mask material itself can also be allowing more of those potentially dangerous droplets to escape into the air.

Dr. Rhonda Low, a Vancouver-based family physician, explained to CTV Morning Live in late May that these masks could even make an exhalation more dangerous than without a mask.

"If you're sick, you're forcibly exhaling droplets through that little valve more, at a smaller aperture, which means the droplets go out quicker and could go farther," she said.

A recent study on how to test the effectiveness of various types of masks published in the journal Science Advances found that the presence of a valve on an N95 that they tested made it significantly less effective than a fitted N95 with no valve.

"The performance of the valved N95 mask is likely affected by the exhalation valve, which opens for strong outwards airflow," the study reads.

"While the valve does not compromise the protection of the wearer, it can decrease protection of persons surrounding the wearer."

Numerous cities within Canada have put out specific recommendations telling residents to stay away from masks with valves.

A factsheet on masks put out by Toronto Public Health and revised this Wednesday specifies that masks with exhalation valves are not recommended because the valves "may filter dust particles in the air as the person inhales, but they may not filter virus particles or respiratory droplets."

In Toronto, and in much of Ontario, face masks are mandatory in indoor areas.

Ottawa Public Health also specifies on their website that masks with exhalation valves are not recommended.

Fort Saskatchewan, Alberta, announced a plan on July 31 for mandatory face coverings to be worn in city facilities, and added that masks with an exhalation valve did not meet the standard of a face covering.

The B.C. Centre for Disease Control posted guidelines on face masks in late June, and specified that "industrial N95 respirators" were not recommended because they have valves.

The U.S. Centers for Disease Control and Prevention also recently updated their website to advise against using respirators with exhalation valves. They add that these masks also "should not be used in situations where a sterile field must be maintained" such as within a hospital setting.

Some regions aren't stopping at just a recommendation against wearing these valved masks.

In San Francisco, California, where the wearing of face masks is required in all businesses and anytime a person comes within 6 feet of someone outside of their household, masks with valves have been included on their list of face coverings that do not comply with the regulations.

"Masks that have a one-way valve designed for easier breathing," were listed, as well as Halloween masks and ski masks. "Holes or one-way valves allow droplets out of the mask, exposing people nearby."

Denver, Colorado, said in a May release that any mask with a one-way valve did not count as a proper face covering under the order requiring individuals to wear masks in public.

And most airlines based in the U.S. have banned face masks with exhaust valves.

Alaska Airlines, United, Delta, JetBlue, and, most recently, American Airlines, have released mandates requiring passengers to wear proper face coverings -- specifying that masks with exhaust valves do not count.

So far, Canadian airlines such as Air Canada and WestJet have not released any specific guidance on masks with valves.

Section H

Additional info and concluding letter

1

Informal report Nicolas Smit created for the US government in November 2022 after a personal meeting he had with ASPR's Director of Infectious Diseases and Preparedness. This report was made to help the US government understand the widespread communication failures that occurred around elastomeric respirators at the federal level and what was known by which agencies. This report provides detailed evidence of widespread failures by the U.S. government around elastomeric respirators and can help provide additional insight into the complex problems that occurred in Canada including how some of the problems were overlooked for years.

Source:
https://www.linkedin.com/feed/update/urn:li:activity:7021592206750744576/

2

Facebook private message Nicolas Smit received from CBC journalist Kate Rutherford on July 3, 2020 to let him know that after 4 weeks of working on an investigation about the government refusing to let the public know about their recommendations to use elastomeric respirators as N95 alternatives, the government refused to provide her with any answers so she would not be able to continue her investigation.

Source: Facebook Messenger private message

3

Latest update of Nicolas Smit's mask classification system, that provides a quick understanding to how well each type of mask compares for protecting the wearer as well as those around the wearer from droplet as well as airborne transmission.

Source:
https://www.linkedin.com/feed/update/urn:li:activity:7003056942931738624/

4

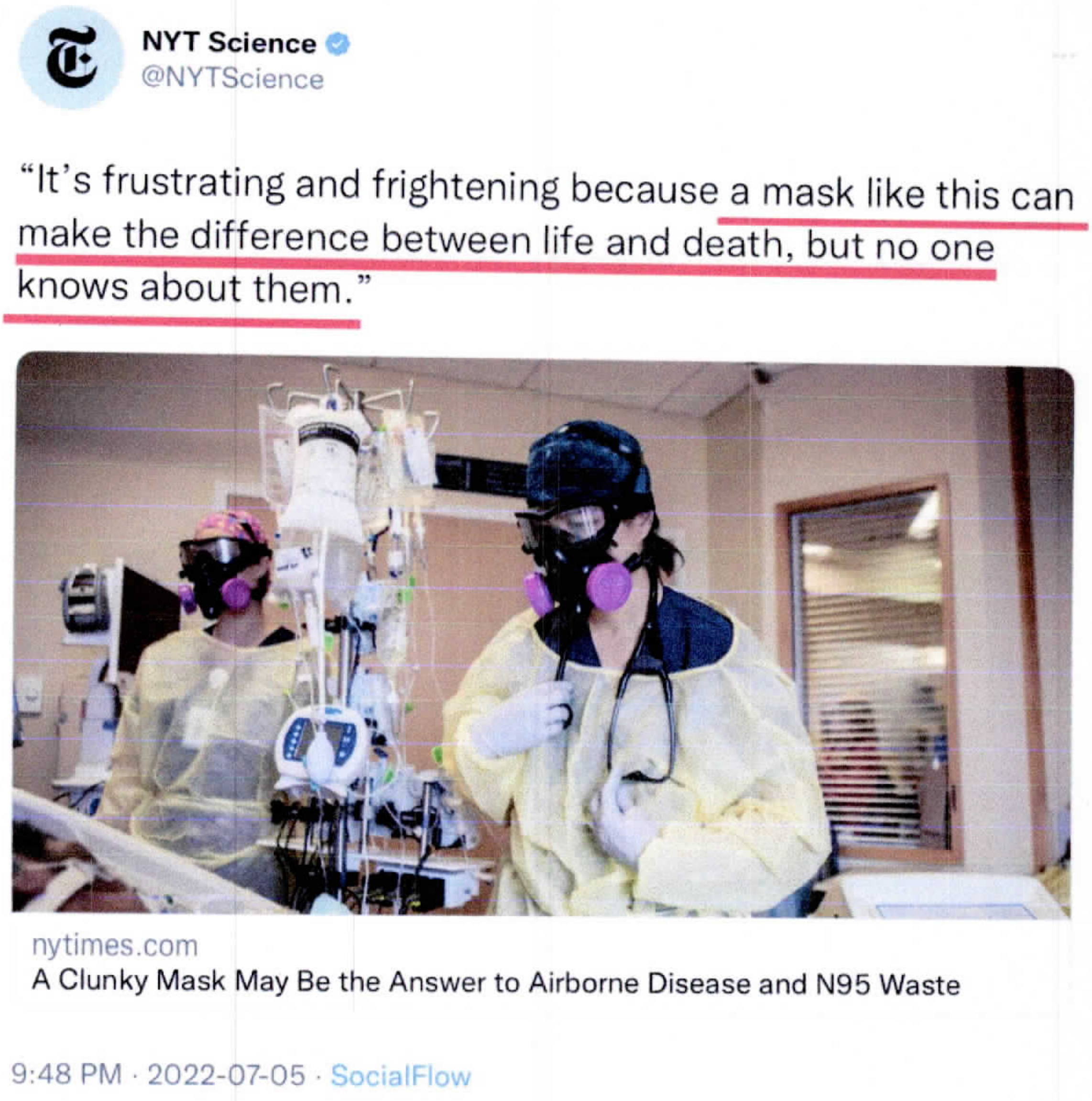
Concluding letter to explain why Nicolas Smit had no choice but to put this information together and alert the Ontario Provincial Police and the Ministry of Labour to the crimes that were committed and continue to be committee by top government officials plus politicians.

Source: Nicolas Smit

Informal report Nicolas Smit created for the US government in November 2022 after a personal meeting he had with ASPR's Director of Infectious Diseases and Preparedness. This report was made to help the US government understand the widespread communication failures that occurred around elastomeric respirators at the federal level and what was known by which agencies. This report provides detailed evidence of widespread failures by the U.S. government around elastomeric respirators and can help provide additional insight into the complex problems that occurred in Canada including how some of the problems were overlooked for years.

Source:
https://www.linkedin.com/feed/update/urn:li:activity:7021592206750744576/

ELASTOMERIC RESPIRATOR RESOURCES INDICATING MASSIVE COMMUNICATION FAILURES BY THE U.S. GOVERNMENT THAT NEED TO BE INVESTIGATED AND CORRECTED



NYT Science
@NYTScience

"It's frustrating and frightening because a mask like this can make the difference between life and death, but no one knows about them."

nytimes.com
A Clunky Mask May Be the Answer to Airborne Disease and N95 Waste

9:48 PM · 2022-07-05 · SocialFlow

Created by Nicolas Smit

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Elastomeric respirators – background information

-OSHA, the CDC and the FDA all agree elastomeric respirators offer better protection than N95s, are more comfortable than N95s and significantly more cost effective than N95s plus that using them would prevent widespread problems caused by N95 shortages

-the CDC says elastomeric respirators are overlooked resulting in a great need for education to ensure people would know to use them however there has been no education whatever provided to the public by the CDC

-elastomeric respirators have been safely used by health care workers and infectious disease hospitals since 1996

-elastomeric respirators were recommended by the CDC as a superior alternative to N95s during SARS, H1N1 and now for Covid 19 plus the White House believes they should be used during future surges and biological attacks

-elastomeric respirators are overlooked by the public, members of Congress, federal agencies and others due to the refusal by the government to promote their recommendations to use them even within federal agencies that are spreading misinformation about them

-1000s of health care workers died after the government refused to follow the CDC pandemic plans to put elastomeric respirators into widespread use and allowed the N95 shortages to occur as anticipated

-misinformation on elastomeric respirators and masks was spread by federal agencies. No one has attempted to correct this misinformation which has been picked up by major news organizations and cited as fact

-the New York Times and Boston Globe investigations covered some the major communication failures by the government which has yet to be investigated by the Covid Oversight Committee despite an interview with Nicolas Smit on July 12, 2022 by Beth Mueller and Nathaniel West

-OSHA recommends their workplace inspectors use elastomeric respirators as the minimum level of protection while visiting workplaces in outbreak

-OSHA wouldn't enforce regulations when health care workers were provided a disinfected N95 instead of an available elastomeric respirator even after NIOSH Director John Howard's congressional testimony about the need to make sure hospitals only provide disinfected N95s if elastomeric respirators are not available

-the National Nurses United co-president Zenei Cortez said that hospitals were locking up elastomeric respirators and telling nurses they might eventually be used in future surges which made no sense since they were made to be reused for years and could've been used for all waves that have occurred since early 2020

-manufacturers that make elastomeric respirators are closing down because nobody knows they are important for infection control

-people that use elastomeric respirators are sometimes told to take them off in public places including on airplanes where other passengers are maskless because people continue to assume they are dangerous

-federal agencies like the TSA still tell passengers to replace their elastomeric respirators for a cloth or surgical mask since they don't know they are safe and recommended

-the government plans to put them into widespread use during biological attacks but have made no attempts to ensure people would be trained or fit tested on their use so any implementation will be significantly delayed and cause tremendous harm to Americans

-the CDC says it is very easy to fit test and train people on using elastomeric respirators and that you are more likely to have a successful fit test with an elastomeric respirator than with an N95

-notable experts to talk to surrounding elastomeric respirators include Simon Smith, Lisa Brosseau, Stella Hines, Nicolas Smit, Tom Frieden and Barry Hunt

-they provide better protection for the wearer against droplets than surgical masks and N95s while also providing better source control protection than surgical masks

*when searching websites for mention of elastomeric respirators, you can easily get to the part of the website or document that mentions them by using the word search function and using "elastomeric" as the word to search for

Section 1 – Direct evidence that federal agencies knew the importance of elastomeric respirators

OSHA

OSHA March 2020 - *Guidance on preparing workplaces for Covid 19*

-"When disposable N95 filtering facepiece respirators are not available, consider using **other respirators that provide greater protection and improve worker comfort**. Other types of acceptable respirators include: a R/P95, N/R/P99, or N/R/P100 filtering facepiece respirator; **an air-purifying elastomeric (e.g., half-face or full-face) respirator with appropriate filters or cartridges"**

https://www.osha.gov/sites/default/files/publications/OSHA3990.pdf

OSHA March 2021 memo - *Updated Interim Enforcement Response Plan for Coronavirus Disease 2019 (COVID-19)*

-"As an alternative to using multiple N95 FFRs, many healthcare employers have switched **critical staff to wearing NIOSH-approved, non-disposable, elastomeric respirators**"

-"**The minimum levels of respiratory protection for CSHOs are a fit-tested half-mask elastomeric respirator with at least an N95-rated filter** or a fit-tested, NIOSH-approved, disposable, filtering facepiece respirator (FFR), such as an N95, since they have an assigned protection factor (APF) of 10. A fit-tested half-mask elastomeric respirator with at least an N95-rated filter is **preferred as minimum protection for use in healthcare settings**."

https://www.osha.gov/memos/2021-03-12/updated-interim-enforcement-response-plan-coronavirus-disease-2019-covid-19

OSHA October 2020 respiratory protection guidance for long term care homes - *RESPIRATORY PROTECTION GUIDANCE for the Employers of Those Working in Nursing Homes, Assisted Living, and Other Long-Term Care Facilities During the COVID-19 Pandemic*

-"During times like the present pandemic, when there are increased demands on the supply chain for N95 FFRs, consider alternatives to N95 FFRs, including other FFRs (e.g., P100s, N99s), reusable elastomeric (rubber) respirators, and powered air purifying respirators (PAPRs). While the initial investment for elastomeric respirators and PAPRs may be greater than for N95 FFRs, **purchasing these types of respirators can often lead to cost savings over the long-term since they are reusable and can also help reduce the impact of supply chain disruptions**."

https://www.osha.gov/sites/default/files/respiratory-protection-covid19-long-term-care.pdf

CAL/OSHA August 2020 webinar on the importance of elastomeric respirators for infection control

-" **Exhalation valves on elastomeric respirators are expected to provide similar source control to a surgical mask** or cloth face covering"

-" Some of the droplets and droplet nuclei adhere to surfaces of the valve and secondary chamber on impaction, **which provides source control similar to masks/face coverings**.
If additional source control is needed, face shields with drapes or surgical masks over exhalation exits can be used.

https://www.dir.ca.gov/dosh/coronavirus/Elastomeric-Respirators-Healthcare-Settings-Berg.pdf

OSHA April 2020 Memo – *Enforcement Guidance for Respiratory Protection and the N95 Shortage Due to the Coronavirus Disease 2019 (COVID-19) Pandemic*

-"If respiratory protection must be used, employers may consider use of alternative classes of respirators that provide equal **or greater protection compared to an N95 FFR, such as NIOSH-approved, non-disposable, elastomeric respirators**"

https://www.osha.gov/laws-regs/standardinterpretations/2020-04-03

CDC

CDC 2003 SARS PPE recommendations – *Interim Domestic Guidance on the Use of Respirators to Prevent Transmission of SARS*

-"When elastomeric (rubber) or powered air purifying respirators (PAPRs) are used, their reusable elements should be cleaned and disinfected after use, in accordance with manufacturer's recommendations. When half or full-facepiece elastomeric negative pressure respirators are used by more than one individual, filters should be replaced between individual users."

https://www.cdc.gov/sars/clinical/respirators.html

CDC H1N1 PPE recommendations – *QUESTIONS & ANSWERS Regarding Respiratory Protection for Infection Control Measures for 2009 H1N1 Influenza among Healthcare Personnel*

-"Other classes of disposable respirators (e.g., N99s, N100s), which are similar in design and shape to N95s, can be considered. Alternatives to disposable respirators, such as powered air purifying respirators (PAPRs), or **elastomeric half-mask and full facepiece respirators, can also be considered, especially in settings such as procedure rooms (e.g. bronchoscopy suites) where higher-risk activities such as aerosol-generating procedures are intermittently performed**"

https://www.cdc.gov/h1n1flu/guidance/ill-hcp_qa.htm

CDC 2017 presentation on putting elastomeric respirators into widespread use during pandemics – *Elastomeric and Powered-Air Purifying Respirators in U.S. Healthcare*

-"Most healthcare workers are aware of the N95 respirator, **but may not be aware that reusable elastomeric respirators are a viable option for respiratory protection"**
-"**Cleaning alone was found to be sufficient for removing/killing influenza"**

https://www.cdc.gov/niosh/npptl/pdfs/ElastomericPAPR-Healthcare-508.pdf

CDC 2017 blog on elastomeric respirators - *Understanding respiratory protection options in Healthcare: The Overlooked Elastomeric*

-"Most healthcare workers are aware of the N95 respirator but may **not be aware that the re-formable, reusable elastomeric respirators are a viable option for respiratory protection.** (Peterson et al., 2015). **Elastomeric respirators** with N95 cartridges have been **used during aerosol transmissible disease outbreak emergencies like SARS as a reusable N95 respirator option**. (CDC-NIOSH January 20, 2012)"

-"Further complicating its common use, **many healthcare workers have never heard of the elastomeric respirator, which indicates that there is a great need for education about the option of this type of respiratory protection.** Although OSHA considers the protective factor for the elastomeric FFR to be the same as the disposable standard N95 FFR, **some health facilities use the elastomeric exclusively due to employee's perceptions of better fit**. The elastomeric FFR may potentially **cost less over time and may not create as much hospital waste as the N95 FFR due to the extended wear time.** The elastomeric respirator offers a viable protection option that hospital administrators and healthcare workers may consider when updating respiratory protection programs."

https://blogs.cdc.gov/niosh-science-blog/2017/07/06/elastomerics/

2019 CDC presentation on elastomeric respirators presented at AOHP conference - *U.S. Healthcare and Elastomeric Respirators*

-"During public health emergencies, healthcare systems may need EHMRs temporarily to fill a surge gap. **Rapidly fit-testing and training HCP may be necessary"**
-**"**Key Benefits of EHMRs **• Reusable •One EHMR assigned to each worker •Potential cost savings •Close the national RPD surge gap"**

https://www.aohp.org/aohp/portals/0/documents/Conf2019/2019A005.pdf

CDC Covid 19 recommendations to use elastomeric respirators as N95 alternatives – *Elastomeric Respirators: Strategies During Conventional and Surge Demand Situations*

-" While elastomeric respirators are not cleared by FDA for fluid resistance, based on their NIOSH approval, they can provide **at least equivalent protection to N95 FFRs**. **Some types of elastomeric respirators can offer higher assigned protection factors (APFs) than N95 FFRs**. They are equipped with replaceable filter cartridges or flexible, disc or pancake-style filters, which are not housed in a cartridge body. All elastomeric respirators equipped with the proper air-purification filters, cartridges, or canisters would also have utility in this application. **Elastomerics may also have sealing surfaces and adjustable straps that accommodate a better fit.**

Because they can be re-used, elastomeric particulate respirators provide an alternative respiratory protection option to FFRs for protection against pathogens. **While this document focuses on respiratory protection for exposure to pathogens, these respirators may also serve as protection against other airborne hazards in healthcare settings.**"

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

CDC April 2020 webinar on elastomeric respirators in a health care setting - *Elastomeric Respirators for U.S. Healthcare Delivery*

youtube.com/watch?v=8wd5Bx2fVDI

August 2020 webinar with CDC officials - *COVID-19 Webinar: Alternative to Disposable N95s: Elastomeric Half-Mask Respirators*

https://web.archive.org/web/20200828040755/https://www.acmt.net/_Elastomeric_Half-Mask_Respirators.html

https://www.youtube.com/watch?v=nqBliXSGBw0

CDC resource page on elastomeric respirators - *Elastomeric Half Mask Respirator Resources*

https://www.cdc.gov/niosh/npptl/respirators/elastomeric/default.html

CDC poster on differences between N95s, surgical masks and elastomeric respirators – *Understanding the Difference*

https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

FDA

March 2021 FDA website announcement about important innovations - *Elastomeric Respirator Innovations Play a Critical Role in Response to COVID-19*

-"Elastomeric respirators, which provide similar protection to other FFRs and are also approved by U.S. Centers for Disease Control and Prevention's (CDC) National Institute for Occupational Safety and Health (NIOSH), **may also be used in health care settings. Given that elastomeric respirators are designed to**

be reusable, they can help to protect health care personnel in our hospitals and doctor's offices in times of reduced disposable N95 supply. In particular, **this type of respirator can play a critical role in the nation's response to COVID-19 and bolster future readiness for similar outbreaks and public health emergencies**."

https://www.fda.gov/news-events/fda-voices/elastomeric-respirator-innovations-play-critical-role-response-covid-19

April 2021 FDA announcement to use elastomeric respirators and stop reusing N95s – *FDA Recommends Transition from Use of Decontaminated Disposable Respirators - Letter to Health Care Personnel and Facilities*

-"Increase inventory of available NIOSH-approved respirators—including N95s and other FFRs, elastomeric respirators, including new elastomeric respirators without an exhalation valve that can be used in the operating room, and powered air-purifying respirators (PAPRs). **Even if you are unable to obtain the respirator model that you would prefer, the FDA recommends that you obtain and use a new respirator before decontaminating or bioburden reducing a preferred disposable respirator**."

https://www.fda.gov/medical-devices/letters-health-care-providers/fda-recommends-transition-use-decontaminated-disposable-respirators-letter-health-care-personnel-and

August 2022 FDA announcement about not using disinfected N95s and to use elastomeric respirators instead - *FDA In Brief: FDA Revokes Emergency Use Authorizations for Certain Respirators and Decontamination Systems as Access to N95s Increases Nationwide*

https://www.fda.gov/news-events/press-announcements/fda-brief-fda-revokes-emergency-use-authorizations-certain-respirators-and-decontamination-systems

Sept 2016 FDA assessment about putting elastomeric respirators into widespread use during pandemics - *Assessment of Half-Mask Elastomeric Respirator and Powered Air-Purifying Respirator Reprocessing for an Influenza Pandemic*

-"The data from this study indicates that the manual C/D protocols based on OSHA and manufacturer guidance for HMERs and PAPRs were effective at removing/killing influenza while in the presence of a soiling agent. **The effectiveness of cleaning alone was equivalent to both cleaning and disinfection at removing/killing influenza**."

https://www.fda.gov/media/104264/download

HHS

2018 HHS – *Hospital PPE planning tool*

-"**A few facilities in the United States use elastomeric half-face respirators with appropriate HEPA filters (usually P100 are included as these respirators are commonly used for industrial and painting applications).** Though information about the use of these devices in the healthcare setting is limited, **they are an attractive potential option and during a pandemic would rapidly pay for themselves.** When the frequency of use of disposable respirators becomes high, the accumulated cost of their use during an incident may become equivalent to elastomeric facepieces. **At this breakeven point, they may have particular relevance in intensive care environments**, for instance."

https://files.asprtracie.hhs.gov/documents/aspr-tracie-hospital-ppe-planning-tool.xlsx

November 2020 HHS document on elastomeric respirators – *Elastomeric Half-Mask Respirators and Powered Air-Purifying Respirators in Healthcare and Emergency Medical Service Settings*

-"EHMR is a respirator with a tight-fitting facepiece made of synthetic or natural rubber materials, which can be used, cleaned, disinfected, stored, and re-used. **EHMRs provide the same level of protection as N95 filtering facepiece respirators (FFRs) and are alternatives for augmenting the total respirator supplies available for use by healthcare personnel (HCP) and emergency medical services (EMS) workers**."

-"**based on their NIOSH approval, they can provide at least equivalent respiratory protection to N95 FFRs**. On March 28, 2020, the Food and Drug Administration (FDA) revised an Emergency Use Authorization for NIOSH-approved FFRs to authorize non-powered air-purifying particulate elastomeric half-facepiece and full-facepiece respirators that have been approved by NIOSH in accordance with 42 CFR Part 84 and listed on the NIOSH Certified Equipment List (CEL) for use in healthcare settings by healthcare personnel when used in accordance with CDC recommendations to prevent wearer exposure to pathogenic biological airborne particulates during respirator shortages resulting from the coronavirus disease 2019 (COVID-19) outbreak (FDA 2020)."

-" **many healthcare organizations have successfully adopted use of EHMRs for routine healthcare, given the benefits** (next section). **A recent report by the National Academies of Sciences, Engineering, and Medicine (2019)* summarizes studies on efficacy and recognizes EHMRs as "a viable option for respiratory protection programs for routine use in health care** when logistic and implementation challenges are addressed, including education, training, cleaning, disinfection, and storage challenges." A recent study explored factors, such as storage and cleaning, influencing use of EHMRs in organizations in which they were available (Hines et al. 2019*)."

-" • **Cost effectiveness: EHMR use can be cost-effective, particularly over the long-term.** A recent study found that **a network reduced the number of N95s needed by 95 percent by implementing an elastomeric mask program, costing the network ten times less per month than purchasing disposable N95s** (Chalikonda 2020*).

• **Reuse: Unlike disposable FFRs, EHMRs are designed to be reusable.** Following manufacturers' instructions, the elastomeric facepiece can be cleaned, disinfected, and reused. While the hard, outer casing of filters, cartridges, or canisters may be wiped down, the filter media inside cannot be cleaned."

-"**CDC Elastomeric Respirators: Strategies During Conventional and Surge Demand Situations provides guidance for cleaning and disinfecting elastomeric respirators and filter cartridges during conventional, contingency, and crisis strategies** (CDC 2020a). Following these instructions, one hospital reported successfully wiping down with a 70-percent alcohol solution or **submerging used respirators in soap and water (without the detachable filter)** (Khamsi 2020*)."

https://files.asprtracie.hhs.gov/documents/elastomeric-half-mask-respirators-and-powered-air-purifying-respirators-in-healthcare-and-ems-settings-fact-sheet.pdf

ASPR

2017 ASPR EMS infection control manual – *EMS infectious disease playbook*

-"Disposable National Institute for Occupational Safety and Health (NIOSH)-approved, fit-tested N95 or **equivalent/higher level respirator (e.g., reusable half-face elastomeric respirator** N95 or higher rating mask or PAPR with full hood and HEPA filter)"

https://files.asprtracie.hhs.gov/documents/aspr-tracie-transport-playbook-508.pdf

2017 ASPR budget for PPE – *Public Health Emergency Medical Countermeasures Enterprise*

-"This year CDC has conducted studies to assess impact of long-term storage/ stockpiling of personal protective equipment (PPE), assessments of feasibility and acceptability of using elastomeric for healthcare worker protection, and studies to determine the best use of N95 respirators to improve the procurement, management and use of stockpiled PPE."

https://aspr.hhs.gov/AboutASPR/BudgetandFunding/Documents/PHEMCE%20Multiyear%20Budget%202017-2021/phemce-myb-2017-21.pdf

September 2020 ASPR Webinar mentioning elastomeric respirators and N95 reuse – *COVID-19: Optimizing Healthcare Personal Protective Equipment and Supplies*

https://files.asprtracie.hhs.gov/documents/aspr-tracie-optimizing-healthcare-ppe-webinar-ppt-final.pdf

DEPARTMENT OF VETERAN AFFAIRS AND DOD

2015 Department of Veteran Affairs study on putting elastomeric respirators into widespread use during pandemics - *Disinfection of reusable elastomeric respirators by health care workers: A feasibility study and development of standard operating procedures*

-"When using the SOPs developed in the study, **without specific training or guidance, naïve health care workers disinfected respirators with zero errors**.

Reusable facial protective equipment may be disinfected by health care workers with minimal training using SOPs."

https://asprtracie.hhs.gov/technical-resources/resource/4995/disinfection-of-reusable-elastomeric-respirators-by-health-care-workers-a-feasibility-study-and-development-of-standard-operating-procedures

https://www.ajicjournal.org/article/S0196-6553(15)00089-9/fulltext

Defense Department update on 3D printing elastomeric respirators – *DOD Uses 3D-Printing to Create N95 Respirators*

https://www.defense.gov/News/News-Stories/Article/Article/2474314/dod-uses-3d-printing-to-create-n95-respirators/

FEMA

FEMA training on elastomeric respirators to solve N95 shortages – *Elastomeric Reusable Respirators - A solution to PPE Shortages*

https://cdp.dhs.gov/training/course/AWR-933-V10

WHITE HOUSE

September 2022 White House update on pandemic preparedness - *FIRST ANNUAL REPORT ON PROGRESS TOWARDS IMPLEMENTATION OF THE AMERICAN PANDEMIC PREPAREDNESS PLAN*

https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-AP3-FIRST-ANNUAL-REPORT-ON-PROGRESS.pdf

October 2022 White House Biodefense plan – *NATIONAL BIODEFENSE STRATEGY AND IMPLEMENTATION PLAN*

https://www.whitehouse.gov/wp-content/uploads/2022/10/National-Biodefense-Strategy-and-Implementation-Plan-Final.pdf

April 2020 White House memorandum on restricting export of elastomeric respirators in order to keep them for American HCWs – *Memorandum on Allocating Certain Scarce or Threatened Health and Medical Resources to Domestic Use*

https://trumpwhitehouse.archives.gov/presidential-actions/memorandum-allocating-certain-scarce-threatened-health-medical-resources-domestic-use/

Section 2 – Unions asking for elastomeric respirators

National Nurses United

https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/0820_COVID19_elastomericRespirators.pdf

https://www.nationalnursesunited.org/know-your-rights-protections-work-covid-19

https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0420_Covid19_N95_FAQ.pdf

https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0320_COVID19_RespiratorReuse.pdf

https://www.nationalnursesunited.org/sites/default/files/nnu/0520_Covid19_H%26S_BattelleDecontamination.pdf

https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0421_Covid19_N95_CrisisStandardsWin_Legal.pdf

https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/0320_COVID_Natl-protection-standards_flyer.pdf

https://www.nationalnursesunited.org/press/rns-protest-short-staffing-ppe-problems-covid-19-crisis-surges

https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/0720_NNU_Letter_Coronavirus_Subcommittee_7_1_2020.pdf

https://www.nationalnursesunited.org/press/mna-and-nnu-renew-call-halt-covid-19-mask-decontamination-processes-after-umass-scientist

https://www.nationalnursesunited.org/national-nurses-united-hospital-safety-standards-during-covid-19-pandemic

https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/1220_Covid19_DeadlyShame_PandemicEquity_WhitePaper_FINAL.pdf

New York State Nurses Association

https://www.nysna.org/blog/2020/09/21/momentum-builds-n95-alternatives

https://www.nysna.org/omicron-demands

https://www.nysna.org/press/2022/nysna-healthcare-professionals-cvph-ratify-new-contract#.Y3Ably9yafA https://www.nysna.org/three-hospitals-moving-reusable-respirators

https://www.nysna.org/blog/2020/08/08/we-need-sustainable-ppe-strategy

https://www.nysna.org/healthcare-employers-ignore-cdc-and-fda-calls-%E2%80%9Cpromptly-resume-conventional-ppe-practices%E2%80%9D

https://www.nysna.org/healthcare-employers-ignore-cdc-and-fda-calls-“promptly-resume-conventional-ppe-practices”#.Y3Ab2y9yafA

https://www.nysna.org/blog/2020/03/17/safe-nurses-safe-communities-union-approach-managing-covid-19-crisis

https://www.nysna.org/blog/2014/08/15/practice-alert-what-nurses-need-know-about-ebola

AFL-CIO

https://aflcio.org/covid-19/respirators-masks-and-face-shields

https://aflcio.org/sites/default/files/2020-03/Action%20to%20Address%20the%20Shortage%20of%20%20Respirators%20and%20Facemasks%20for%20COVID%20Final.pdf

https://aflcio.org/sites/default/files/2020-05/2055_PPE-Face_v2_.pdf

https://aflcio.org/about/leadership/statements/protecting-workers-covid-19

https://aflcio.org/sites/default/files/2021-04/2118_WMDMaterials_1.pdf

Washington State Nurses Association

https://www.wsna.org/calendar/how-elastomeric-respirators-and-paprs-can-better-protect-healthcare-workers-during-covid-19

CWA

https://cwa-union.org/coronavirus-guidance-use-reuse-n95-respirators

Section 3 – Evidence on the importance of elastomeric respirators provided at congressional hearings and studies showing how important they are for infection control

Evidence provided at congressional hearings

May 28 2020 – *EXAMINING THE FEDERAL GOVERNMENT'S ACTIONS TO PROTECT WORKERS FROM COVID-19*

"**Dr. HOWARD**. Thank you for that fair question. I am aware of those surveys and I understand that being a healthcare worker myself. I think one of the issues that I would like to emphasize at the get-go is that **decontamination of an N95 respirator is not the first step in optimizing the use of respirators for healthcare workers. It is literally the last step. Every other type of respirator that we recommend in healthcare, a PAPR, an elastomeric, et cetera, be used before you decide to decontaminate your supply of N95s.The science about decontamination is relatively new, and I mean, very new**."

https://www.congress.gov/116/chrg/CHRG-116hhrg41104/CHRG-116hhrg41104.pdf

June 9 2020 - *BUILDING A MORE RESILIENT VA SUPPLY CHAIN*

-"The VA has contracted with 3M and additionally has received 1.8 million respirators to date and have contracted for over 25,000 powered air purifiers **and 25,000 elastomeric, which are the reusable respirators.**"

https://www.congress.gov/116/chrg/CHRG-116shrg44699/CHRG-116shrg44699.pdf

March 11 2021 - *CLEARING THE AIR: SCIENCE–BASED STRATEGIES TO PROTECT WORKERS FROM COVID–19 INFECTIONS*

-"That means that nurses and other frontline workers must be given respiratory protection. **At minimum, we need N95 respirators which are only safe for a single use**. Power aired purifying respirators and **elastomeric respirators are more protective, and are safely reusable**."

https://www.congress.gov/117/chrg/CHRG-117hhrg43869/CHRG-117hhrg43869.pdf

Evidence on need for elastomeric respirators provided by National Nurses United

-"Where N95 respirators are truly not available, employers should turn to PPE designed to be reusable and decontaminated safely, including powered air-purifying respirators (PAPRs) and elastomeric respirators.7"

-" 7 The U.S. Occupational Safety and Health Administration wrote in their guidance document that when disposable N95 filtering facepiece respirators are not available, **consider using other respirators that provide greater protection and improve worker comfort**, including a R/P95, N/R/P99, or N/R/P100 filtering facepiece respirator; an air-purifying **elastomeric (e.g., half-face or full-face) respirator** with appropriate filters or cartridges; powered air purifying respirator (PAPR) with high-effciency particulate resistance (HEPA) filter; or supplied air respirator (SAR). U.S. Occupational Safety and Health Administration (2020), "Guidance on Preparing Workplaces for COVID-19," online at https://www.osha.gov/Publications/OSHA3990.pdf"

-"Respirators vary in their level of protection and filter efficiency. **Elastomeric and powered air-purifying respirators (PAPR), for instance, provide higher levels of respiratory, eye and face protection from infectious particles than N95 filtering facepiece respirators**."

"**Instead of racing to the lowest standard possible**, employers should **provide other types of respirators that have equivalent or higher levels of protection, such as elastomerics**, PAPRs, industrial N95s, other kinds of filtering facepiece respirators (N/P/R-100, etc.), and comparable respirators from other countries (KN95s, FFP2/3)."

-"Before resorting to wearing industrial N95s, other types of reusable respirators should be considered first, such as powered air-purifying respirators (PAPRs) or elastomeric respirators. **In addition to its reusability advantages, both PAPR and full-facepiece, elastomeric respirators provide higher levels of respiratory, eye, and face protection from infectious substances than N95s**."

https://www.congress.gov/116/meeting/house/110776/witnesses/HHRG-116-GO00-Wstate-CastilloB-20200610-SD001.pdf

March 11 2021 - *CLEARING THE AIR: SCIENCE–BASED STRATEGIES TO PROTECT WORKERS FROM COVID–19 INFECTIONS*

-"That means that nurses and other frontline workers must be given respiratory protection. At minimum, we need N95 respirators which are only safe for a single use. Power aired purifying respirators and **elastomeric respirators are more protective, and are safely reusable**."

https://www.congress.gov/117/chrg/CHRG-117hhrg43869/CHRG-117hhrg43869.pdf

July 13 2021 - *Occupational Safety and Health Administration (OSHA): Emergency Temporary Standards (ETS) and COVID-19*

-"employers must provide employees who have contact with known or suspected COVID- 19 cases with respirators, gloves, isolation gowns or protective clothing, and eye protection. Respirators must be provided and used in accordance with OSHA's respiratory protection standard.52 **When an employee is performing an aerosol-generating procedure, such as intubation, on a known or suspected COVID-19 case, the employer is encouraged, but not required, to provide the employee with an elastomeric respirato**r or powered-air purifying respirator (PAPR).53 Covered employers must also comply with PPE requirements in CDC's guidance document 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, as updated in July 2019."

https://crsreports.congress.gov/product/pdf/R/R46288/30

Valuable studies on elastomeric respirators

Elastomeric respirators provide a much better seal than N95s, especially during quick head movements

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2777504

How easy it is to fit test and train people to use them

https://jamanetwork.com/journals/jama/fullarticle/2763841

How easy it is to fit test and train vs an N95 (NIOSH studies)

https://pubmed.ncbi.nlm.nih.gov/32211889/

Implementation guidelines by the Maryland School of Medicine

https://archive.hshsl.umaryland.edu/handle/10713/14748

How respirators with exhalation valves offer better source control than surgical masks (CDC studies)

https://www.cdc.gov/niosh/docs/2021-107/default.html

Cleaning and disinfection perceptions

https://journals.sagepub.com/doi/10.1177/2165079920938618

2015 CDC disinfection study showing minimal training is needed

https://pubmed.ncbi.nlm.nih.gov/25816692/

Study from 1st wave on how health care workers liked using elastomeric respirators so much that none of the 2000 health care workers wanted to stop using them and go back to using N95s at end of the study. This study also showed a 90% reduction in costs vs N95s in the first month of use alone.

https://www.sciencedirect.com/science/article/pii/S1072751520304713?via%3Dihub

https://www.youtube.com/watch?v=3mynwSQDR9k

Using elastomeric respirators during pandemic surges https://www.ncbi.nlm.nih.gov/books/NBK540080/

2009 CDC study on using elastomeric respirators to solve N95 shortages during pandemics

https://wwwnc.cdc.gov/eid/article/15/6/08-1196_article

Storage and availability in health care settings

https://pubmed.ncbi.nlm.nih.gov/31593514/

2019 how health care workers would prefer using elastomeric respirators over N95s in higher risk scenarios

https://pubmed.ncbi.nlm.nih.gov/30638674/

How elastomeric respirators are more protective and sustainable than N95s

https://intjem.biomedcentral.com/articles/10.1186/s12245-020-00296-8

Section 4 – News articles discussing elastomeric respirators

New York Times

July 2022 – how 1000s of health care workers died because the government refused to use and promote elastomeric respirators

https://www.nytimes.com/2022/07/03/health/covid-ppe-masks-health-care.html

May 2020 – the government failure to promote elastomeric respirators

https://www.nytimes.com/2020/05/27/us/coronavirus-masks-elastomeric-respirators.html

February 2021 - short film on Covid ICUs where most health care workers are using elastomeric respirators

https://www.nytimes.com/video/opinion/100000007578176/covid-icu-nurses-arizona.html

CNN

June 2020 – a large study released by the American College of Surgeons on elastomeric respirators

https://www.cnn.com/business/newsfeeds/prnewswire/202006031327PR_NEWS_USPR_____NE23699.html

February 8 2020 – how elastomeric respirators can be used to stay protected from Covid

https://www.cnn.com/2020/02/08/health/coronavirus-hospital-infections-frieden/index.html

February 2021 – how elastomeric respirators are more comfortable and protective than N95s

https://www.cnn.com/2021/01/29/opinions/covid-19-n95-masks-availability-karan-dhillon-srikrishna/index.html

March 25 2020 – how the government is asking other countries for elastomeric respirators

https://www.cnn.com/2020/03/25/politics/us-global-appeal-corona-supplies/index.html

February 25 2020 – how the effects of the N95 shortage can be prevented by using elastomeric respirators

https://www.cnn.com/2020/02/25/health/coronavirus-pandemic-frieden/index.html

Washington Post

February 2021 – how putting elastomeric respirators and N95s into widespread use can bring a quick end to the pandemic

https://www.washingtonpost.com/outlook/2021/02/17/government-send-masks-all-americans/

USA Today

April 2020 – how the CDC ignored their pandemic plans to put elastomeric respirators into widespread use to avoid problems caused by expected N95 shortages

https://www.usatoday.com/story/news/nation/2020/04/03/coronavirus-national-stockpile-disposable-n-95-face-masks-reusable-respirator/5118669002/

April 2020 – how to clean and reuse your elastomeric respirator

https://www.usatoday.com/in-depth/news/2020/04/27/how-clean-care-for-store-and-reuse-masks-protect-coronavirus-n-95-elastometric-homemade-covid-19/5148025002/

April 2020 – how elastomeric respirators provide a better fit than N95s

https://www.usatoday.com/in-depth/news/2020/04/03/coronavirus-protection-how-masks-might-stop-spread-through-coughs/5086553002/

CBS News

February 2021 – how elastomeric respirators are more durable and cost effective than N95s

https://www.cbsnews.com/news/n95-mask-mandate-where-to-buy-2021-02-01/

Boston Globe

July 2022 – evidence the government is not ready for future pandemics or this one is proven by their communication failures around elastomeric respirators

https://www.bostonglobe.com/2022/07/17/opinion/us-is-still-not-prepared-next-pandemic/

January 2021 – government communication failures around elastomeric respirators mean they remain overlooked

https://www.bostonglobe.com/2021/01/27/business/you-need-better-mask-heres-how-find-buy-one/

The Atlantic

October 2022 – elastomeric respirators are much better than N95s and putting them into widespread use can stop the pandemic and prevent future pandemics from occuring

https://www.theatlantic.com/science/archive/2022/10/pandemic-n95-mask-protection-shortcomings-indoor-air-quality/671723/

The Guardian

January 2022 – manufacturers have created easy to use elastomeric respirators with filters that provide better protection than N95s

https://www.theguardian.com/commentisfree/2022/jan/20/covid-england-mask-boris-johnson-omicron

CBC

June 2021 – the province of Ontario has had enough elastomeric respirators for every health care worker in the province but they have been kept in a warehouse since June 2020 in order to keep them for future pandemics while health care workers use surgical masks instead

https://www.cbc.ca/news/canada/ottawa/ottawa-covid-masks-protection-1.6053953

Kaiser Health News

April 2021 – the government bought 375,000 elastomeric respirators for the SNS

https://khn.org/news/article/year-into-pandemic-feds-design-new-mask-guidelines-to-better-protect-more-workers/

August 2020 – elastomeric respirators provide better protection than N95s and can be used for protection from wildfire smoke and Covid

https://khn.org/news/wildfires-provide-another-reason-to-mask-up/

June 2021 – the government bans the use of surgical masks around suspected or confirmed patients with Covid and now only allow elastomeric respirators and N95s to be used

https://khn.org/news/article/labor-department-osha-emergency-rules-protect-health-care-workers-from-covid/

Politico

March 2020 – government update on Covid PPE and how the CDC recommends elastomeric respirators be used to end the N95 shortages

https://www.politico.com/f/?id=00000171-31d2-da0d-a17b-ffdba9e40000

KEN5

May 2020 – elastomeric respirators have been used by health care workers at infectious disease hospitals since 1996. They are more protective, significantly more cost effective and the filters only need to be switched out once a year.

https://www.kens5.com/article/news/health/san-antonio-hospital-could-have-an-answer-to-the-ppe-crisis-elastomeric-masks/273-882e7ea3-e377-4776-906c-33ce89e193cc

Section 5 – Examples of misinformation spread by the government

Elastomeric respirators are too dangerous to use

FDA

https://www.fda.gov/news-events/fda-voices/elastomeric-respirator-innovations-play-critical-role-response-covid-19

CDC

https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirator-use-faq.html

https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/types-of-masks.html

HHS/ASPR

https://files.asprtracie.hhs.gov/documents/elastomeric-half-mask-respirators-and-powered-air-purifying-respirators-in-healthcare-and-ems-settings-fact-sheet.pdf

CDC/CNN

https://www.cnn.com/2022/01/15/health/mask-guide-faq-n95-kn95-wellness/index.html

CDC/Boston Globe

https://www.bostonglobe.com/2020/05/27/nation/wearing-face-mask-with-valve-it-might-be-time-find-something-else-some-experts-say/

Evidence indicating the government knows that was misinformation

CDC - studies showing even uncovered exhalation valves provide better source control than surgical masks

https://www.cdc.gov/niosh/docs/2021-107/default.html

AIHA report on CDC studies

https://www.aiha.org/news/201210-niosh-study-examines-potential-for-source-control-of-ffrs-with-an-exhalation-valve

https://synergist.aiha.org/202102-ffrs-with-exhalation-valves

CDC - HICPAC November 2020 meeting where the CDC explains elastomeric respirators with exhalation valves are not dangerous for source control protection as everyone assumes

https://www.cdc.gov/hicpac/pdf/2020-November-HICPAC-Summary-508.pdf

Cal/OSHA - August 2020 webinar explaining that the government believes exhalation valves on elastomeric respirators provide similar source control as a surgical mask

https://www.dir.ca.gov/dosh/coronavirus/Elastomeric-Respirators-Healthcare-Settings-Berg.pdf

Only N95s and KN95s are known to be able to stop Covid transmission

Dr Fauci – July 2022 interview with the Hill

https://mynbc15.com/news/nation-world/fauci-says-masks-need-to-be-high-quality-and-well-fitted-for-best-protection-anthony-dr-doctor-covid-coronavirus-n95-kn95

CDC/CNN – January 2022

https://www.cnn.com/2022/01/15/health/mask-guide-faq-n95-kn95-wellness/index.html

CDC – January 2022 mask guidelines not mentioning elastomeric respirators yet still recommending cloth masks

https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/types-of-masks.html

White House/NBC News – January 2022

https://www.nbcnews.com/politics/white-house/white-house-says-it-will-distribute-400-million-free-n95-n1287672

Evidence indicating the government knows that was misinformation

CDC – poster showing elastomeric respirators on par or better than N95s

https://www.cdc.gov/niosh/npptl/pdfs/UnderstandingDifference3-508.pdf

CDC – 2017 presentation talking about elastomeric respirators being put into widespread use and that they are at least as protective as N95s

https://www.cdc.gov/niosh/npptl/pdfs/ElastomericPAPR-Healthcare-508.pdf

CDC – guidelines on how to use elastomeric respirators to stay protected from Covid

https://www.cdc.gov/coronavirus/2019-ncov/hcp/elastomeric-respirators-strategy/index.html

CDC – April 2020 webinar on elastomeric respirators in a health care setting explaining how they can keep health care workers protected as well or better than an N95

https://www.youtube.com/watch?v=8wd5Bx2fVDI

OSHA – original March 2020 workplace Covid workplace guidelines explaining that elastomeric respirators are more protective and comfortable than N95s

https://www.osha.gov/sites/default/files/publications/OSHA3990.pdf

OSHA – March 2021 memo for workplace inspectors to upgrade to elastomeric respirators from N95s while visiting workplaces experiencing Covid outbreaks

https://www.osha.gov/memos/2021-03-12/updated-interim-enforcement-response-plan-coronavirus-disease-2019-covid-19

Section 6 – Additional information

Questions that have yet to be answered

Why did the government decide to abandon their pandemic plan to put elastomeric respirators into widespread use and instead go with N95 disinfection and reuse when elastomeric respirators had been safely used by HCWs for decades and N95 disinfection was known to be dangerous and a banned practice? *In May 2020 congressional hearings, NIOSH Director John Howard testified that before health care workers are given a disinfected N95, hospitals need to ensure they do everything possible to provide elastomeric respirators to health care workers first due to how dangerous disinfected N95s are.*

https://www.congress.gov/116/chrg/CHRG-116hhrg41104/CHRG-116hhrg41104.pdf

Why did the government continue with the disinfection process after it was proven to significantly harm health care workers and damage N95s to the point in being unsuitable for protection from Covid? *In January 2021 the FDA lowered the allowed disinfection process to 4 cycles down from 20 when N95s were no longer in short supply and elastomeric respirators were widely available but Representative Katie Porter and unions sounded the alarm about the dangers in April and May 2020.*

https://www.fda.gov/media/136529/download

Why has the government refused to let the public, other countries, members of Congress, States and all staff at federal agencies involved in pandemic planning know about the CDC recommendations to use elastomeric respirators as N95 alternatives, that they provide better protection than N95s while also being more cost effective or that they were meant to be safely reused for years while N95s weren't made to be reused at all?

When federal agencies, the White House and the press reported that only N95s and KN95s were known to be able to keep people safe from Covid, why didn't anyone ensure that information was immediately corrected so misinformation wouldn't keep being spread? *The government claims to be working hard to fight misinformation however they've made sure to keep misinformation around elastomeric respirators on their own websites despite the New York Times investigation and many warnings by Nicolas Smit.*

When OSHA, the CDC and the FDA first started recommending elastomeric respirators as N95 alternatives in the first few months of the pandemic, why did they not do any PSAs to ensure this was known by the public or at least all hospitals and long term care homes since they knew it would be overlooked and education would be important?

The CDC knows surface transmission is not a concern for Covid transmission so why have they continued to make social media posts on the need for hand washing to stop Covid but have never in their entire history made a single tweet about elastomeric respirators when it was mentioned in their pandemic plan to make sure people wouldn't overlook using them during pandemics due to the lack of familiarity?

Why does the government continue to believe that the public should not learn about the importance of elastomeric respirators and that they should continue to be lead to believe that cloth masks are great options but elastomeric respirators shouldn't even be considered?

What is the benefit to keeping everyone in the dark about the importance of elastomeric respirators when manufacturers that make these respirators are now closing due to the lack of awareness to their importance and people that do use them are often told to take them off because most people assume they are too dangerous to use?

When members of Congress and the White House found out about the major communication failures and negligence surrounding elastomeric respirators by Nicolas Smit through meetings and email communication, what was done to correct these issues and who was alerted to these issues so they could be properly investigated and fixed?

After Beth Mueller and Nathaniel West, top investigators on the House Covid Oversight Committee, interviewed Nicolas Smit about his knowledge on the widespread systemic failures around elastomeric respirators, what did they do with that information and who did they speak with?

Since the White House and HHS biodefense plan is to provide essential and critical infrastructure workers with N95s and elastomeric respirators, how do they plan to ensure people know elastomeric respirators are safe and are they prepared for any pushback that could occur if they wait until an attack happens to let the public know elastomeric respirators are safe to use during pandemics and biological attacks?

When the public was told to avoid using N95s for the first 18 months of the pandemic so those respirators could be saved for health care workers, why wasn't the public told about how common and readily available elastomeric respirators where since millions of Americans have them in their homes already and millions of workers are using them in the mining, construction, agricultural, pharmaceutical and home renovation industries? *Those industries could have limited their use of N95s had they known elastomeric respirators could be used not only for protection from hazards in their industry but also from Covid as well plus they could've donated excess elastomeric respirators to hospitals in need of PPE like the mining industry did at the start of the pandemic.*

What can the government do to fix their communication failures

-the White House can hold a press conference focused on elastomeric respirators to finally let the world know about their importance

-the government can do PSAs on federal agency websites, on social media, on radio, through online ads and on television to ensure they finally become widely known

-the government can stop letting the public know to use cloth masks and instead let them know to use elastomeric respirators and surgical masks with bracers alongside with N95s plus KN95s

-the government can ask social media companies to stop censoring posts and ads on elastomeric respirators so people would have an easier time finding accurate information and finding one that works for them

-the government can remove the misinformation they left online to ensure it does not keep being assumed as fact

-the government can ensure all health care workers, government employees and critical infrastructure employees are fit tested and trained on their use so that there is no delay in using them when needed

-the government can distribute the elastomeric respirators they have in the SNS to hospitals since they can be used during the pandemic and then returned to the SNS once they are no longer needed

-the government can work with manufacturers, corporations and philanthropic donors to buy stockpiles of elastomeric respirators that can distributed by NGOs to those that need them domestically and in developing nations to help stop the spread of dangerous new variants and limit their ability to transmit when they do occur

-the government can incentive domestic production so they can be even more widely available for people looking for proper respiratory protection

-the government can offer a tax credit of $50 to incentivize people to buy their own respirators including elastomeric respirators that can claim

-the government can use the USPS to offer free shipping for homes and workplaces as a way to apologize for their ongoing communication failure and help keep costs down for everyone

-the government can ensure all unions and workers know to advocate for elastomeric respirators

-the government can ask hospitals to stop locking up elastomeric respirators from health care workers

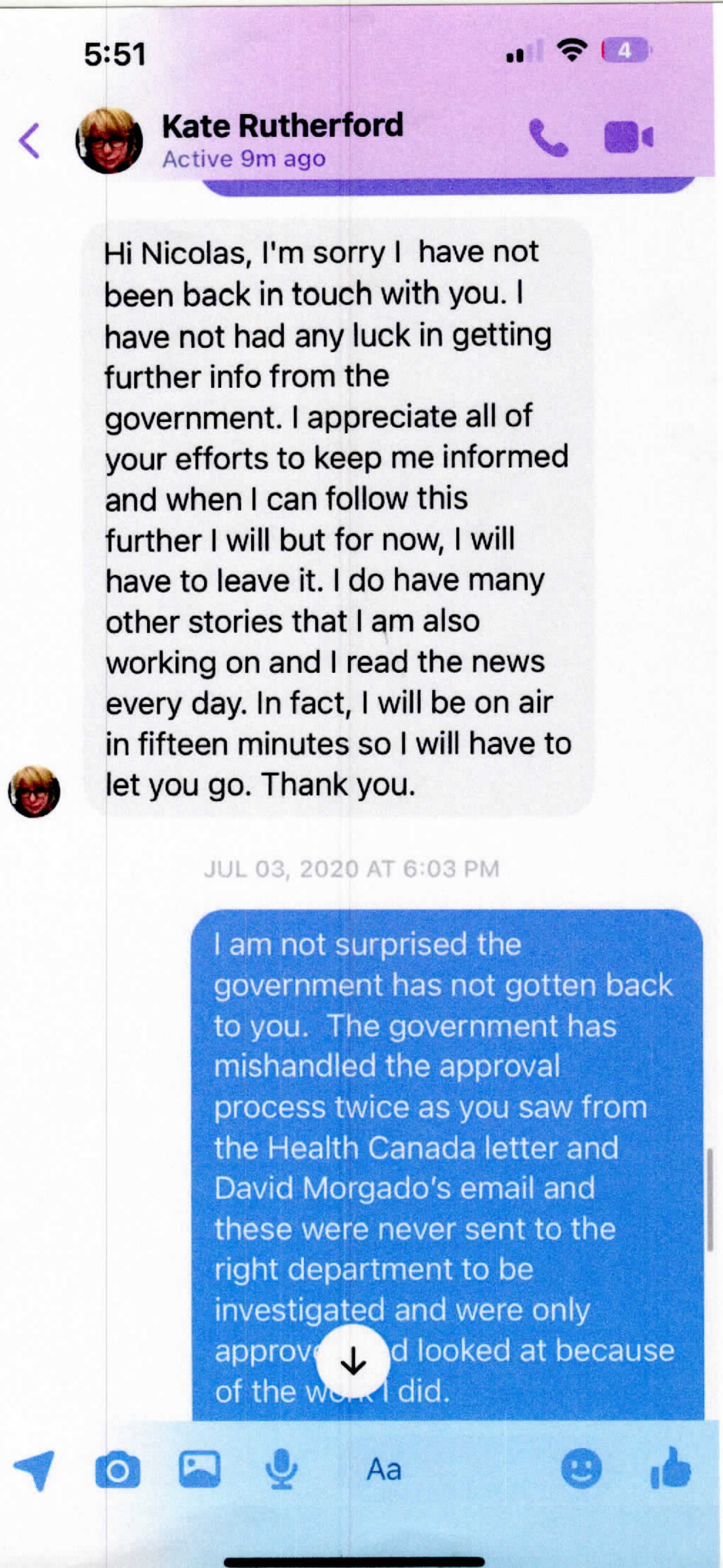
-the government can reach out to Canada and let them know about their huge mistake in locking up 100,000s of elastomeric respirators meant for health care workers since June 2020

-the government can apologize for the significant harm they created by refusing to correct the misinformation or communication failures

2

Facebook private message Nicolas Smit received from CBC journalist Kate Rutherford on July 3, 2020 to let him know that after 4 weeks of working on an investigation about the government refusing to let the public know about their recommendations to use elastomeric respirators as N95 alternatives, the government refused to provide her with any answers so she would not be able to continue her investigation.

Source: Facebook Messenger private message



Hi Nicolas, I'm sorry I have not been back in touch with you. I have not had any luck in getting further info from the government. I appreciate all of your efforts to keep me informed and when I can follow this further I will but for now, I will have to leave it. I do have many other stories that I am also working on and I read the news every day. In fact, I will be on air in fifteen minutes so I will have to let you go. Thank you.

JUL 03, 2020 AT 6:03 PM

I am not surprised the government has not gotten back to you. The government has mishandled the approval process twice as you saw from the Health Canada letter and David Morgado's email and these were never sent to the right department to be investigated and were only approv d looked at because of the w I did.

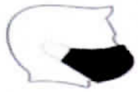
3

Latest update of Nicolas Smit's mask classification system, that provides a quick understanding to how well each type of mask compares for protecting the wearer as well as those around the wearer from droplet as well as airborne transmission.

Source:
https://www.linkedin.com/feed/update/urn:li:activity:7003056942931738624/

CHOOSING THE RIGHT MASK

THE SIMPLIFIED MASK IDENTIFICATION TABLE SYSTEM – THE SMIT SYSTEM

		PROTECTION AGAINST		PROTECTION FOR	
LEVEL OF PROTECTION	**DIFFERENCE**	**DROPLET TRANSMISSION**	**AIRBORNE TRANSMISSION**	***WEARER***	***THOSE AROUND THE WEARER***
Level 1 ***CLOTH MASK*** (loose fit) 	*- better than no mask* *-no electrostatic charge to attract and trap virus particles* -additional layers will improve protection but not enough to offer a reliable level of protection from infection	**MINIMAL** +	**MINIMAL** +	**MINIMAL** +	**MINIMAL** +
Level 2 **SURGICAL MASK, P1** (loose fit) 	-gaps allow the virus to bypass mask -not considered respiratory protection -provides good protection against droplets transmission -moderate protection from airborne transmission	**GOOD** +++	**MODERATE** ++	**MODERATE** ++	**MODERATE** ++
Level 2 (+) **SURGICAL MASK WITH BRACERS & KN95s** (tight fit) 	-bracers help seal the surgical mask so that all air has to pass through the filter material -provides respiratory protection almost as good as an N95	**GREAT** ++++	**GREAT** ++++	**GREAT** ++++	**GREAT** ++++
Level 3 **N95, N99, N100, P100 WITH EXHALATION VAVLES** (tight fit) 	-uncovered valve offers better source protection than surgical masks -valve can be covered with a surgical mask to further improve source control protection	**GREAT** ++++	**GREAT** ++++	**GREAT** ++++	**GOOD** +++
Level 3 (+) **N95, N99, N100, P100, FFP2, P2** (tight fit) 	-provides great protection for wearer and those around them from airborne AND droplet transmission -filters at least 95% of airborne particles at .3 microns -not made to be reused	**GREAT** ++++	**GREAT** ++++	**GREAT** ++++	**GREAT** ++++
Level 4 **ELASTOMERIC RESPIRATOR WITH EXHALATION VALVES &** ***N95, N99, N100, P100, FFP3 OR P3 FILTERS*** (tight fit) 	-uncovered valve offers better source protection than surgical masks -valve can be covered with a surgical mask to further improve source control protection -better protection than N95s thanks to their seal -are available in half face & full face options -made to be reused for months to years	**EXCEPTIONAL** +++++	**EXCEPTIONAL** +++++	**EXCEPTIONAL** +++++	**GOOD** +++
Level 4 (+) **ELASTOMERIC RESPIRATOR WITHOUT EXHALATION VALVES &** ***N95, N99, N100, P100, FFP3 OR P3 FILTERS*** (tight fit) 	-the most cost effective option for virus protection -provides a much better seal than N95s -filters at least 95% of airborne particles at .3 microns. -provides 100% protection to the wearer & those around the wearer -made to be reused for months to years	**EXCEPTIONAL** +++++	**EXCEPTIONAL** +++++	**EXCEPTIONAL** +++++	**EXCEPTIONAL** +++++

4

Concluding letter to explain why Nicolas Smit had no choice but to put this information together and alert the Ontario Provincial Police and the Ministry of Labour to the crimes that were committed and continue to be committee by top government officials plus politicians.

Source: Nicolas Smit

Concluding letter

Countless safeguards meant to keep the government accountable for their actions have failed simultaneously. The deafening silence of union leaders, opposition politicians, Health Critics, Labour Critics and Attorney General Critics after learning about widespread negligence that continues to cost the lives and livelihoods of workers has resulted in the culmination of this report. So many key people workers rely on and trust had countless opportunities to speak up and help hold Doug Ford and the Ontario government accountable for purposely withholding PPE from healthcare workers and those working in long term care while also pretending that the lack of PPE was due to PPE shortages that were out of their control.

Since April 2020, the Ontario government has knowingly kept spreading dangerous misinformation on elastomeric respirators being too dangerous to use despite Ontario Health recommendations to use them as safe N95 alternatives. An internal investigation in June 2020 at Doug Ford's office lead to the realization of how overlooked elastomeric respirators were and of all the early problems the government had created by not being transparent with the public or doing their due diligence.

With the complicitness of the NDP in the negligence including MPPs France Gelinas, Jamie West, Mike Mantha and Kristyn Wong-Tam as well as MPs Don Davies and Carol Hughes, unions refused to even alert their own members to the problems they faced preventing them from fighting for themselves. Even though many workers died, the NDP and unions have said accountability for those deaths is not important to them and neither is exposing the problems so they could be properly investigated and fixed.

In my October 2022 meeting with NDP MPP Kristyn Wong-Tam, countless times after I would bring up the negligence and impact it had on workers, the only response I would get is "who cares" or "why should anyone care". Ms Wong-Tam told me the first few years of the pandemic was when this negligence should've been exposed but that it no longer matters to mention or try to correct. She explained the NDP does not like talking about masks or mask issues workers face and would only try to hold the Ford government accountable for what occurred if the NDP won the majority in the next election.

Except from a few tweets from union leader Micheal Hurley, you won't find unions making a single mention of elastomeric respirators on social media. Most healthcare unions have gone on the record in letters to the government to say elastomeric respirators should be given to their union members saying they would be kept even safer than in N95s however their public advocacy would have you believe that only N95s can be used and that the lack of proper PPE their members face was never due to the government purposely withholding 100,000 elastomeric respirators.

The federal Liberals spent the first few months of 2021 infighting amongst themselves about the need to alert Canadians to the negligence, correct the negligence that occurred at the federal level and publicly pressure Doug Ford to distribute the stockpile of PPE that could eliminate infections among workers in hospitals and long term care homes. Instead they decided to sweep the problems under the rug and work with Doug Ford so he wouldn't do much to criticize the Liberals during the federal election.

The Ontario Liberals were supposed to work with the Federal Liberals to expose the negligence and pressure Ford but after Ontario Liberal leader John Fraser failed go public with what he knew, Ford got another free pass and ended up getting a bigger majority in the 2022 election since voters had no clue what had occurred.

In October 2022, Liberal MP Nathaniel Erskine-Smith said he would help me get the federal government to remove the misinformation on their websites and let the public know to use elastomeric respirators as part of the masks the public can use. Unfortunately after 4 months of delay, Nathaniel's office got back to me to let me know the government wouldn't remove the misinformation and didn't want the public to use elastomeric respirators due to the potential those with exhalation valves could let unfiltered air into the environment.

Nathaniel won't explain why the government believes that wearing no mask is safe but wearing a mask that can fully protect the wearer and protects those around the wearer better than surgical masks is somehow extremely dangerous. He won't even explain why the government couldn't at least recommend elastomeric respirators without exhalation valves since they pose no risk at all to those around the wearer. Now that Nathaniel is looking to run as the Ontario Liberal leader, I fear he could take the Liberal silence and inaction to new heights in order to not have to apologize to voters for choosing to protect his party vs public health and the economy.

Since all journalists see is the government misinformation and never hear unions or opposition politicians speak up about elastomeric respirators, they assume that there's nothing wrong or surely someone besides me would be speaking up. Had anyone in a position of power come forward over these last 3 years, I would not be writing this report today. It will be hard for the public to be able to trust the government going forward but it would be even harder if the government chooses not to act on the evidence provided in this report and that they have to learn from journalists about it instead.

While I was able to get the White House Covid team, members of Congress and Directors at top US federal agencies handling the pandemic to work with me and take my suggestions seriously, I can't get a single Canadian politician or union leader to take worker health and safety seriously. I fear that if nothing is done, the long term damage will be impossible to repair and trust in institutions including the OPP and Ministry of Labour could be damaged by the refusal to hold those in power accountable.